MAY 1974

THE SIGNALMAN'S JOURNAL

Assistant signalman John Huckabay works on hotbox detector units at SP's signal shop. . . . . see page 8.

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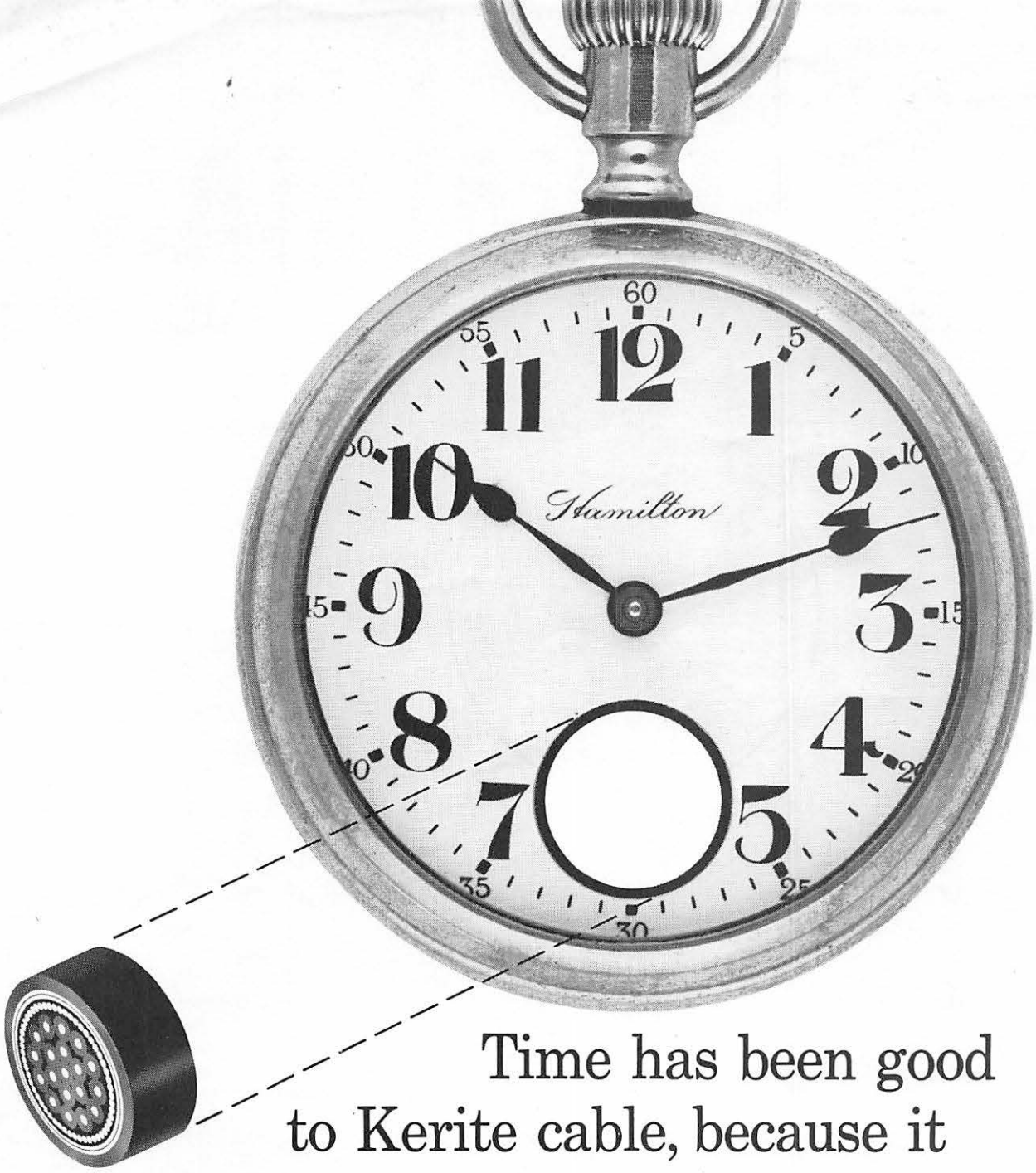

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THE
SIGNALMAN'S JOURNAL

OFFICIAL PUBLICATION BROTHERHOOD OF RAILROAD SIGNALMEN
Robert W. McKnight, Editor and Manager
601 W. Golf Road, Mount Prospect, IL 60056

May 1974

Vol. 55 No. 4

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Cover: Author and assistant signalman **John Huckabay** works in Southern Pacific's Sacramento signal shop.

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POSTMASTER'S NOTE: Please report all undeliverable magazines to The Signalman's Journal, 601 W. Golf Road, Mount Prospect, IL 60056 on Form 3579.
ADDRESS CHANGE: B. of R.S. members or other subscribers should promptly advise the editorial office, 601 W. Golf Road, Mount Prospect, IL 60056 if this magazine is coming incorrectly addressed or if they change their address.
The Signalman's Journal is published monthly (except bi-monthly January-February and July-August) at 213 W. Madison St., Waterloo, WI 53594 by the Brotherhood of Railroad Signalmen. Second class postage paid at Mount Prospect, IL and Waterloo, WI.

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Chamberlain's Message

Keep those signals in service!

In asking for a moratorium on signal changes in the Northeast quadrant of the United States, we were answered by Department of Transportation Secretary Claude S. Brinegar to the effect that we present our case at a Federal Railroad Administration hearing in Washington on March 28 concerning a Baltimore & Ohio application to remove automatic block signaling on 90 miles of line between Brookdale and Ashford, NY. The Brotherhood of Railroad Signalmen was well represented at the hearing, however, Secretary Brinegar was not represented or present. The hearing officer was Eugene Cox, transportation analyst, policy and planning office, DOT. Also represented at the hearing were B&O officers and the Brotherhood of Locomotive Engineers. If Mr. Brinegar wanted to participate, he did not show himself, nor send anyone to present the views of DOT.

We still hold that determinations concerning signal system removals should not take place until the final core system of railroads in the Northeast is finally determined. Lines which may have little rail traffic today, may become heavily traveled lines in the core system. It certainly would be a waste of time, energy and taxpayer's money to hold signal system removal hearings on lines in the Northeast when the final system has not been determined.

Furthermore, the energy crisis has placed the entire railroad industry in a whole new ballgame and a further deterioration of the railroad plant should be brought to a screeching halt.

Our case was ably presented by attorneys William G. Mahoney for the Brotherhood of Railroad Signalmen and Richard E. Kraushaar for the BLE. Our position is clear.

FRA cannot make a valid decision on whether to permit the B&O to remove ABS on 90 miles of line in New York State because it does not have the facts upon which to make such a decision. Because this line is in the Northeast quadrant of the country and involved in DOT's report on service in that area, traffic patterns are not now known as to what they will be following approval of the ultimate core system. Sometime after the spring of 1975, presumably, the basic rail system will be approved by the U.S. Congress.

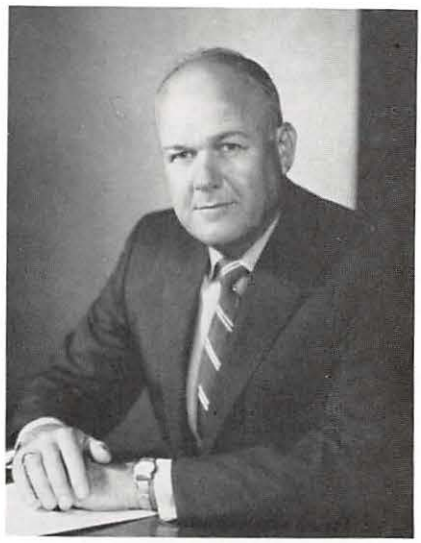
Is it a coincidence that the DOT report on rail service in the Midwest and the Northeast Region recommends that this B&O line be abandoned?

Interestingly, Cox said this hearing could bring out the facts in the case, as well as the merits of this line, but it is not the purpose of this hearing to determine how it relates to the proposed restructuring of the rails in the Northeast. Could be that Cox did not get the word from Brinegar. Maybe that's the real problem—lack of communication within DOT and lack of practical railroad men who want to improve the railroad industry instead of tearing it down.

In this case, B&O used the time-worn arguments that the traffic on the line is down to two trains daily and one switching operation, and that the signal system and pole line are deteriorating. Hence the expense of keeping signals operating is not justified. Carrier witnesses did admit that the signal system is functioning and is kept in repair to meet FRA signal RS&I standards. We pointed out that traffic predictions following rail reorganization in the Northeast cannot be predicted at this time, hence the line might be of vital usage next year; and the present signal system is operating safely and the railroad can't really predict when it will fail.

Another point that should be considered is the impact of the track safety standards on rail traffic. A dramatic change occurred on a Penn Central line running north from Cincinnati. Last year FRA permitted PC to remove the signal system because of low density of traffic. After the track safety standards went into effect in October of last year, traffic increased from about two trains daily to over ten and now two Amtrak passenger trains are running over a line without an operative signal system.

We cannot stress too strongly



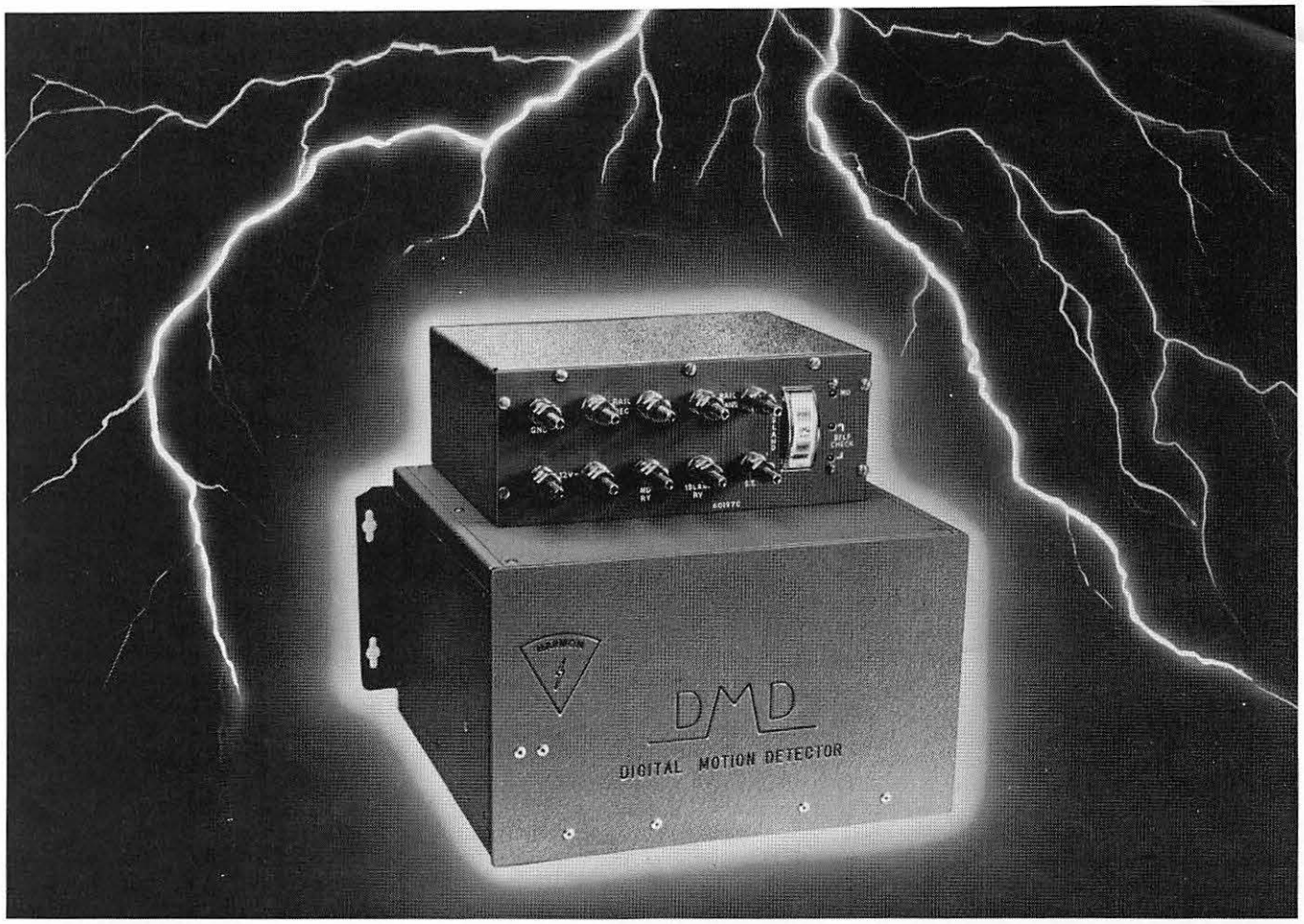
that signal systems in the Northeast quadrant of the U.S. remain in service. It just doesn't make sense to remove a system that provides the safety of signaling in the face of uncertainty of traffic that persists in this area. And now, more than ever, with the general increase in traffic, much of it due to the energy crisis with more trains hauling coal and oil, it is folly to remove the one element that can provide safety for train movements. Knowledgeable railroad men know that signaling provides increased train handling capacity.

The message seems clear to those who want to maintain America's railroads as a safe, competitive means of transportation. **Keep those signals in service. For safer operations and increased capacity, more signaling should be installed.** DOT's policy of continuing erosion of our railroad plant must be brought to an abrupt halt.

Expression of Thanks

The family and Mrs. G. Frank Harper wishes to express our deepest appreciation to our many friends for every expression of sympathy and kind thoughts shown during the illness and death of our loved one. For prayers, visits, calls, floral arrangements, cards, service donations and all other acts of sympathy expressed—we thank you. Each expression of love and sympathy will be held in our memories forever.

God bless each of you—is our prayer.



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News

W. G. Mahoney (standing) answered questions about Illinois RTA.

Rail union efforts helped Illinois RTA

It was a "squeaker" but efforts of four major railroad unions in the northeastern part of Illinois played a key role in supporting the Regional Transportation Authority which was approved by only 12,800 plus votes on March 19 in a six-county area. Forty railroad union members met Feb. 21 at Rosemont, IL to map strategy for winning support for RTA. Voters in the six Illinois counties of Cook, DuPage, Kane, Lake, McHenry and Will voted on RTA, but it took Chicago to put the referendum over. Only Cook county voted in favor of RTA, but it was enough to overcome the opposition of the other five counties. About 1.3 million votes were cast. Major objection of the other five counties was that they would be represented by only two members of an 8-member board. Four members would represent Chicago and two would represent Cook county. Apportionment was based upon the one-man, one-vote principle.

A 6-man Railway Labor Legislative Committee headed up the strategy for winning support for RTA. Members included **W. W. Altus,** vice-president, Brotherhood of Railroad Signalmen; **T. J. Duggan,** director Illinois State Legislative Board, United Transportation Union; **R. D. Fritz,** chairman Illinois Legislative Committee, Brotherhood of Railway and Airline Clerks; **W. G. Mahoney,** Washington, DC attorney; **J. W. McGinness,** assistant director Illinois State Legislative Board, UTU; and **G. J. Nixon,** director of research, American Train Dispatchers Association.

Major effort of the rail unions was the mailing of post cards and literature to members in the 6-county area urging them to vote for RTA.

Crossing safety conference set for Colorado

The fifth National Conference on Rail-Highway Crossing Safety will be held August 19-21, 1974 at the U.S. Air Force Academy in Colorado Springs, CO.

"The purpose of these meetings is to provide an open forum whereby all interested parties can exchange ideas and information on methods of implementing grade crossing improvements," Federal Railroad Administrator John W. Ingram said.

"The problem has been with us ever since railroads were invented. Cooperation between the various Federal, State and local government bodies as well as with the private sector greatly enhances our ability to forge the tools needed to implement effective national grade crossing improvement programs," he said.

Prior conferences helped to lay the groundwork for the types of programs needed to reduce the number of accidents at grade crossings. The upcoming conference will direct its attention to methods of implementing the programs.

Topics to be discussed at the three-day conference include: priority programs for grade crossing improvement; tools available for establishing these programs; urban rail relocation projects; and new developments in rail-highway grade crossing programs.

The conference is sponsored by the Department in cooperation with the Highway Research Board, the National Safety Council, National Association of Regulatory Utility Commissioners, Brotherhood of Railroad Signalmen, Association of American Railroads, and the American Association of State Highway and Transportation Officials.

Emblems Available

Cloth emblems for all major railroads are now available. Emblems are available in 2", 3" or 4" sizes.

A hickory stripe engineer cap with emblem attached plus an extra emblem (not attached) is priced at $2.25. Please be sure to include name, address and cap size with your order.

For $1.25 a list of emblems available plus two sample emblems may be obtained.

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Safety seminars lined up through year

The jointly-sponsored one-day Railroad Labor-Federal Safety Law seminars have been set up for the remainder of 1974. The following list of cities and dates have been confirmed. Additional information, pre-registration forms and meeting places will be available when arrangements are known.

Wednesday May 22 at St. Louis (Sheraton-Jefferson Hotel)

Wednesday June 26 at Denver, Colorado

Tuesday August 7 at Chicago, Illinois

Wednesday Sept. 25 at Portland, Oregon

Thursday Oct. 24 at Boston, Massachusetts

Wednesday Oct. 30 at Columbus, Ohio

Wednesday Nov. 6 at Washington, D.C.

Mrs. Anna Montvid retires from BofRS

Mrs. Anna Montvid retired May 1 from the Brotherhood of Railroad Signalmen headquarters after 36 years of service. She joined BofRS in 1938, at age 24, as secretary to THE SIGNALMAN'S JOURNAL assistant editor and manager E. A. Moore. "I was very happy to come into the BofRS at a time when some of the founders were still around. I joined the organization when there were still hard times, financially, and I have enjoyed watching it grow and prosper to its sound condition today," she said.

She recalls hearing from her parents about the hardships of founding unions, especially the physical and financial trials. Thus, Mrs. Montvid has spanned the period from early years of BofRS, through its buildup in strength via presidents A. E. Lyon and Jesse Clark to its prominence in the rail labor movement under the leadership of president Charles J. Chamberlain.

When she started, the Signalmen's office was on the second floor of a building at 4849 North Western avenue in Chicago. When Art Lyon became executive secretary of the Railway Labor Executives' Association in 1947, Jesse Clark succeeded him as president, and Anna Montvid became Clark's secretary. During Clark's terms of office, BofRS purchased a private home at 504 West Wellington avenue in Chicago's Town Hall district, just off Sheridan road. Under Chamberlain, the organization constructed its present headquarters in Mt. Prospect, moving here in August 1973.

"It's been a wonderful life experience working for the BofRS, and I have fond recollections of the various officers, especially the ones I encountered early in my career," she says. She often worked with them on National Railroad Adjustment Board cases, signal applications and signal RS&I applications and protests.

As for C. D. Martin, midwest vice-president, Anna Montvid remembers him as one "who could write long, perfect grammatical sentences. He wrote in long hand, and one sentence would fill a full page of paper. Yet his writing was logical, tracked very well, and was in all respects perfect."

Concerning Art Lyon, now president emeritus, she says: "He is probably the most brilliant, intelligent person I have been associated with, and a great administrator."

D. C. Cone, vice-president east, she remembers as "the perfect gentleman." Obviously, she was in a position to observe many others, including Jesse Clark during his presidency, whom she rates "as being the leader building and strengthening on the foundations set by his predecessors."

She enjoyed her work, especially its variety, as in the early days, she did "normal" secretarial work, and also set up a filing system and often was "general office clerk." For the last seven years she has been in charge of the headquarter's central files, a job that requires meticulous attention to detail. And that Anna Montvid has. Talking with her one soon realizes that she speaks precisely with no lost words or motions. She would have made an excellent librarian, is how one fellow worker characterized her.

Off the job, her interests range from extensive reading to music and "taking some college courses for the enjoyment of them." Anna Montvid will be missed at BofRS headquarters, but all her fellow workers and grand lodge officers wish her many happy years of enjoyable retirement. She has earned them.

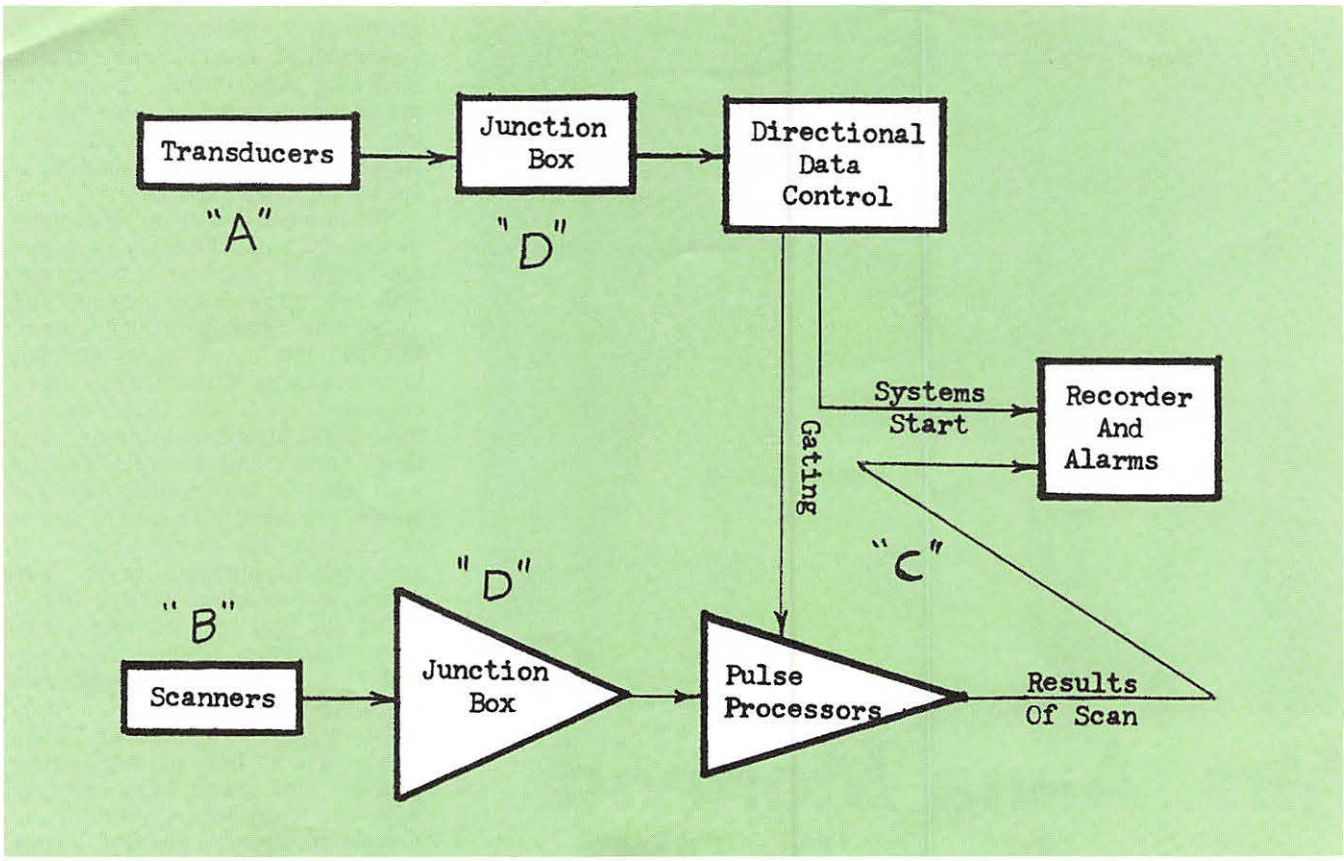
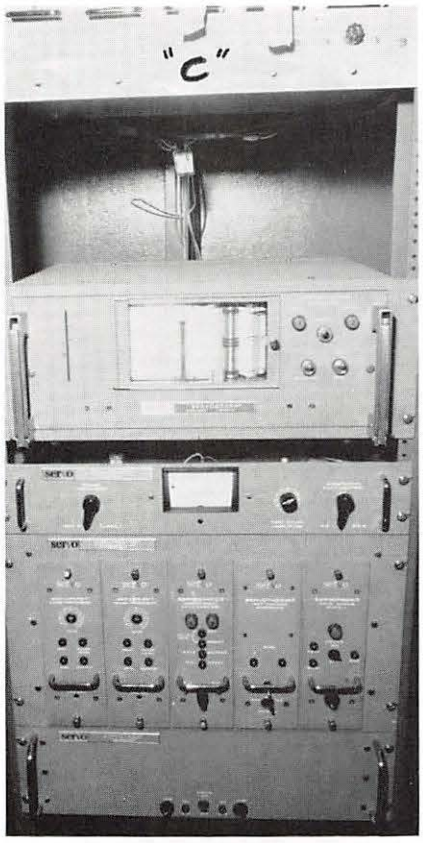
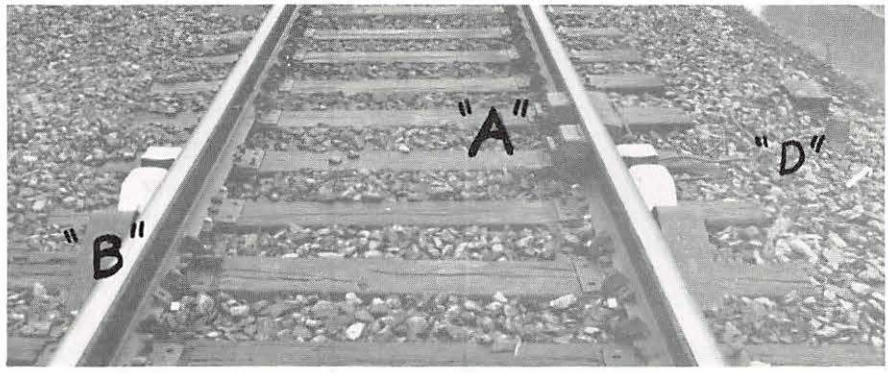


Figure 1 is a simplified block diagram of a Servo hotbox detector system.



Wayside bungalow houses "brains" including recorder and alarms, directional data controls and pulse processors.



Scanners, transducers and junction box are key elements.

HB detector basics are described

By John R. Huckabay

All railroads have been plagued by overheated wheel journals since the first steam engine pulled its first load. The loss of cargo to fire prompted immediate initiation of various systems of detection. Without some system of early warning, losses in life, property, and time were and are unavoidable.

"Preventive maintenance" and rolling inspections became an essential part of curtailing hotbox damage. Each time a train came into a yard every bearing was checked for proper lubrication and wear. All work crews would split up on each side of the track and visually check for overheated jour-

nals, bearings, and dragging equipment as the train passed.

Sophisticated sensors now detect heat and dragging equipment. But the sensors aren't intended to completely replace the personal touch of "preventative maintenance"' or visual checks. As far as replacement is concerned, electronic equipment supplements the efforts of human checks.

There is some risk to standing near a train. Trains do derail and, occasionally, items fall off, creating a dangerous situation to anyone nearby. Electrical or mechanical eyes eliminate much of this hazard by removing the need to stand near the train when it is moving.

The old method readout for a hotbox detector required the brakeman to leave the train, open the readout unit, and note the number of axles from the rear of the train to the overheated journal. The process of getting off the train proved to be time consuming and inconvenient, not unlike most new systems.

As indicated in Figure 2, the readout was a considerable distance from the scanners and house. Long transmission cables, which were expensive and difficult to install and maintain, were necessary from the readout to the house.

Modern display boards, clearly visible from the train, have in most locations replaced the old smaller readouts. Mounted on a short mast, the new display boards can be placed next to the hotbox house itself, where they show an axle or truck reading which can be read from either direction and from some distance away. This not only eliminated the wasted time going to and from unlocking readouts, it also completely dispensed with those long costly transmission lines.

With the older indicating process, the train traveled through the scanning process and got a red indication at the next signal if an alarm was triggered. The brakeman would then check the count on the readout while a white light held any following trains with a "wait" indication.

Another system was the Jet Spray System. When an overheated journal or bearing was scanned, the system would spray that wheel with white paint. This was good because it eliminated any miscount, but it did have at least one disadvantage. In cold weather the paint would freeze, and the overheated journals would not get painted. If the spray system malfunctioned and didn't spray, the train crew would have to stop the train and call for appropriate signal personnel to unlock the hotbox house and read the alarm location from the recorder.

To keep the paint from freezing, it was kept moving from the paint source, to the spray gun, and back to the source again. But even with circulation in the pipes, the paint in the gun nozzle could not be circulated. This nozzle paint would crust and freeze, resulting in sporadic operation or total jamming of the system. Needless to say, the Jet Spray System did not become widely used.

Author **John Huckabay** (see front cover picture) is an assistant signalman at Southern Pacific's Sacramento, CA signal shop. He joined SP in September 1972, and is a member of Local 170, BofRS. Brother Huckabay has a 2nd Class FCC radio-telephone license with a radar endorsement and a diploma in Electronics Technology from the Cleveland Institute of Electronics. He specialized in communications and computer technology in the CIE correspondence course. Pursuing his interests further, Brother Huckabay will receive an AA degree in Computer Technology from American River College next month.

His daily chores for SP include typing of wire identification tags, laying out circuit boards and mounting terminals for installation in relay cases and equipment bungalows. Also, he gets down to "basics" such as sweeping and mopping the shop floor.

As with all machinery and circuits, hotbox detectors have become more sophisticated and efficient. With the new model of hotbox circuits, for example, journals and bearings could be scanned with the train moving from 5 to 150 mph. The old hotbox units could scan trains at speeds from 5 to 90 mph. Now, thanks to solid-state equipment, a higher speed of sensing and interpreting data has been developed.

Solid-state switching circuits change states in the nanosecond region, whereas tubes and relays work in the millisecond region. One nanosecond equals 0.000000001 of a second, whereas one millisecond equals 0.001 of a second.

At first glance, it may not be apparent why such fast switching circuits are needed. It is true that if the circuits are strictly "on" and "off," as the gating sequence is, then nanosecond switching is not necessary. But the Pulse Processing unit does more than gate the alarms and recorder. It also shapes the incoming pulses.

When the bolometer scans a journal, the output pulses' shape and amplitude depend on two factors: heat and train speed. If an abnormally hot journal is scanned, the amplitude of the pulse will be higher. If the train is slow, the bolometer will put out a comparatively long pulse when compared to a faster train. If the train speeds up or slows down, the bolometer's output pulses will vary in width from the beginning of the train to the end.

The recorder and other alarm circuits need a fast rise-time, consistent-shaped pulse to operate in an efficient dependable manner. The Pulse Processor, with its solid state circuits, accomplishes the nec-

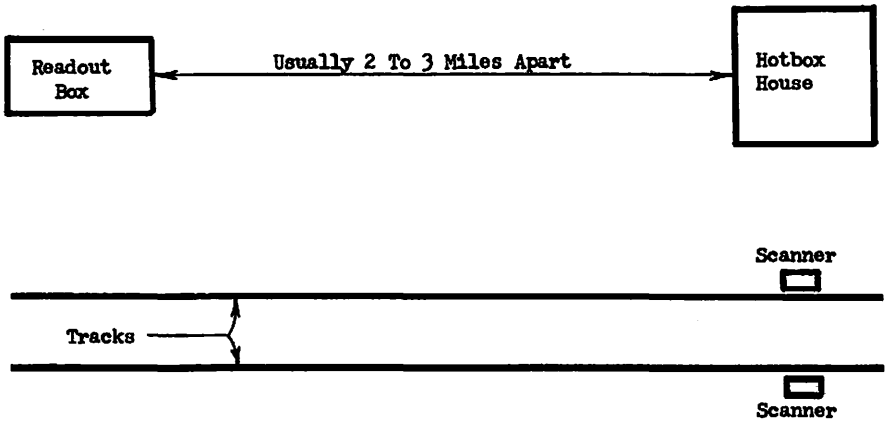


Figure 2—Readout unit is located stopping distance away from scanners.

essary pulse shaping and amplification needs.

The latest state-of-the-art of solid state can place thousands of transistors on a chip one inch long. With proper design, transistors and other solid state devices can handle large amounts of current and automatically compensate for normal amibient and component temperature changes.

The actual changes made in the hotbox system were a slow process of evolution. Scanners are now mounted directly to the rail, so the pouring of concrete scanner foundations has been eliminated. The houses have been changed from steel to fiberglass, thus reducing corrosion and weight problems.

A new digital counting unit, using a system of lights, may replace the solenoid controlled panel readout. The new display reads numbers from a figure eight readout formed by lights, not solenoid controlled white panels. The major advantage of lights over solenoids is no moving parts to wear and rot away. Also, a light can be replaced much easier than a solenoid.

The old display board had seven small white panels to make up the figure eight readout (see Figure 3). This type of display is still in wide use and no intent is assumed here that it will ever be removed from service and replaced by a light display. The light readout is simply being tried, and at first glance it appears to have some advantages.

Hotbox detectors must be properly located to exploit their full potential. They should be at least thirty miles distance from the train's starting point to allow defective journals to overheat enough to trigger the alarm. The hotbox unit should be far enough from curves and declines to keep the hot brakes from giving a false indication.

All of the detectors can be equipped to transmit data by an FM carrier to any point desired. So it is possible to monitor a train in the backwoods from any central point.

The graph recorder can be placed up to 5 miles away with a direct line running to the hotbox house. The recorder makes a permanent record of all journals and bearings on each train. Under normal conditions, the recorder will also distinguish between the journals and roller bearings by the relative heat indications, the journal being the cooler running of the two.

The major function of the hotbox detector systems is to sense overheated journals and bearings. But to replace its human counterpart, the detector must also show the exact car position in the train, which axle on that car was hot, and which side of the car the hot indication came from.

Certain requirements had to be met before the detecting apparatus could function as a whole unit. To replace a human standing by the tracks, the unit had to have eyes. Then it had to interpret and display what its eyes saw. To be more efficient, this robot had to see inside the metal casing enclosing the journals.

When a man looks at a hot journal, he sees smoke or maybe fire. What was needed was a device

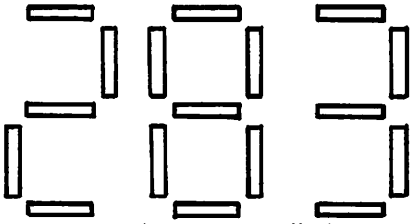


Figure 3—Solenoid-controlled white panels shows 283.

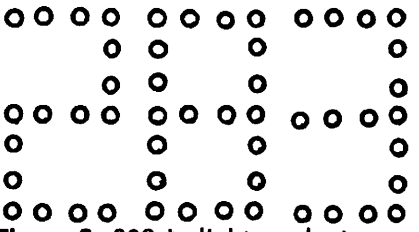


Figure 3—283 in light readout.

that would somehow change its state or output instantly when a certain amount of heat was present.

A thermister bolometer is a device which changes its state almost instantaneously in the presence of infrared radiation. A lense is used to focus the heat from journals on the thermister bolometer to amplify the infrared signal.

The change of state is a change in resistance with heat. The thermister bolometer has a negative temperature coefficient, which simply means that with an increase in temperature, the resistance of the bolometer will drop proportionally. This drop in resistance will offset the bridge's balance, of which the bolometer is an integral part, and send a negative voltage spike to the preamplifier, where it is amplified to a usable level.

The initial change is very small, usually in the millionths of a volt. To increase the signal strength a preamplifier is in the scanner.

The scanners also contain heaters to maintain a minimum operating temperature of about 100° F. There are two reasons why this particular temperature is maintained. The first is that the bolometer becomes excessively sensitive at lower temperatures. The second is to prevent an excessive change in the bolometer's characteristics by limiting the temperature change it will operate in.

In conjunction with the heaters, the Reference Voltage Supply also helps the bolometer win its never ending bout with temperature fluctuations.

The Reference Voltage Supply acts as a bias supply for the thermister bolometer. When the temperature changes, so do the characteristics of the bolometer. The Reference Voltage Supply acts to compensate for the change in temperature by changing its voltage in an inversely proportional direction to the temperature. The bolometer's negative temperature coefficient is an opposite effect to the change in voltage. This effects the characteristics of the bolometer in such a manner as to compensate for ambient or environment temperature changes.

The eyelid, or aperture blade on the scanner, opens before the train arrives, and closes after the train leaves. The older models of hotbox detectors often missed the first wheel because the blades would not open fast enough. The new aperture blade can operate in temperatures ranging from -30° F. to +140° F., and are fast enough to get the first wheel up to 150 mph when augmented by an advanced start transducer.

When closed, the aperture blades keep rain, dirt, and snow from contaminating or disrupting the scanner circuit and functions. When open, the scanner heaters are shut off and the thermister bolometer is ready for the trucks.

The complete detector system has two types of eyes. One set scans the journals for heat, the other informs the system of the train's presence. The first uses a temperature controlled variable resistance device, the latter uses rail mounted variable reluctance devices called, transducers.

A transducer is a device which

changes one state of energy to another. Both eyes are actually two different types of transducer. However, the magnetic transducer, to classify parts, retains the name appropriate to its function.

The transducers determine when a train is present and which direction it is traveling. This information is sent to the Directional Data Control module, where appropriate gating and systems actuation are initiated.

The transducers, in this instance, work off the principle that if a wire is moved through a magnetic field, or the magnetic flux changes across a stationary wire, a voltage will be induced in that wire. Therefore, two methods of inducing voltage in the wire are possible: move the wire, or change the flux. As long as magnetic flux is in motion across a wire, the flux will induce a voltage in the wire.

The stationary wire, changing field method is used in hotbox transducers. This wire is wound to form a coil around a permanent magnet. The flux travels through the air around the magnet and through the metal that makes up the track. When the train wheel passes near the magnet, the flange on the wheel reduces the air gap which the magnetic flux must span to commute between poles.

As shown in Figure 4, the wheel flange electrically brings the track closer to the magnet. Since the metal in the track and wheel is a more efficient flux conductor than air, the flux sees less resistance between its poles. More flux is allowed to pass between poles for the instant the wheel is directly over the transducer unit. When the wheel leaves the transducer, the strong magnetic field collapses. The two changes in flux induce a voltage pulse in the wire coil around the magnet. This pulse makes possible the hotbox train sensing network.

In Figure 5, there are four transducers: A, B, C, and D. C and D determine the direction the train is traveling, while A and B are the "on" and "off" sources for gatting the Pulse Processors. After the train passes, the hotbox unit times out in 6 to 8 seconds and shuts itself off.

Normally, the first truck, or axle is not counted. This is because the first truck sets the system to count and scan. The second truck sets the system in motion. With Advanced System Control, which is an option with the system, the circuits are set to read the first truck. This is done by taking the initial pulse, received from the first axle, and setting all of the circuits to "read," instead of just setting them "on" and then to "read."

The scanner and transducer signals are both sent to their respective junction boxes. The scanner signal, a negative voltage pulse, is again amplified before being routed to its proper Pulse Processor. The transducer signal is not amplified at the junction box, it is routed to the Directional Data Control, where it will be sent to the appropriate Pulse Processor for gating purposes.

Once the scanner begins to operate, the aperture blade remains open for continual scanning of the entire train. To prevent false readings caused by various heat sources under the train, the reading taken between wheels must be eliminated somewhere before it is recorded. This is accomplished in the Pulse Processors by the gating signals from the Directional Data Control.

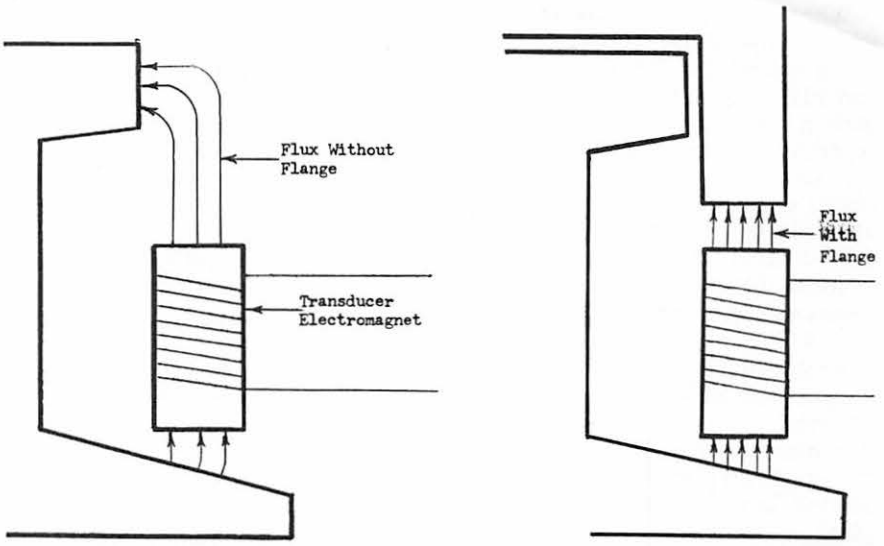
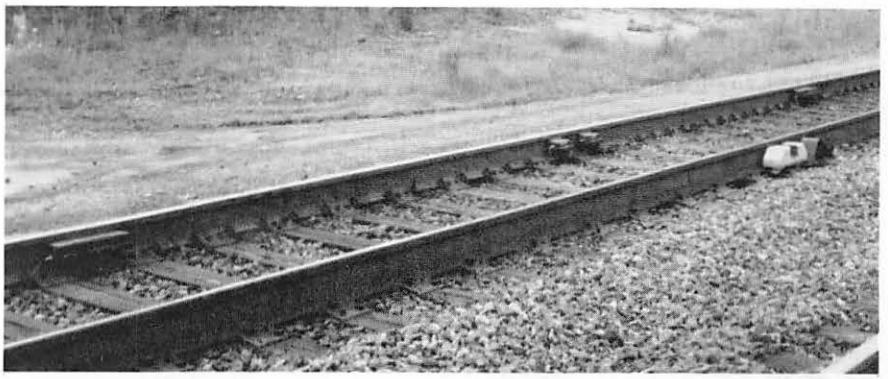


Figure 4—Wheel flange brings track closer to magnet.



Transducers C A B D are on inside of far rail opposite scanner shown.

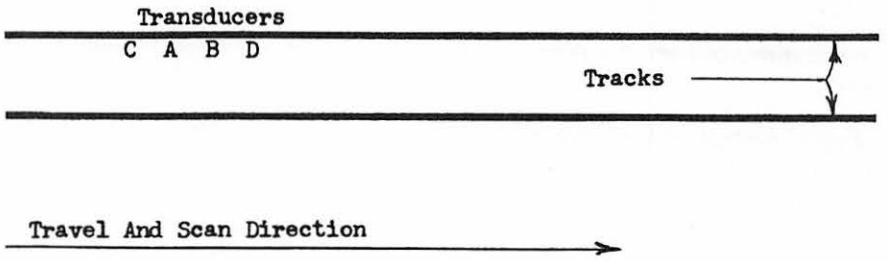


Figure 5 shows positioning of the four transducers.

When the scannners are between wheels, the Pulse Processors are gated to release, to the recorder and alarm circuits, the heat information acquired during wheel scanning. When transmitting to the alarm circuits, the Pulse Processor's receiving circuits are disabled until a new "on" signal is received from the Directional Data Control. By gating the Pulse Processors in this manner, false readings are effectively stopped.

Each rail has its own Pulse Processor, both of which are identical, interchangeable plug-in modules. The main purpose of the Pulse Processors is amplifying, shaping, and storing heat information to be applied to the recording and alarm devices. The new Pulse Processors are all solid state, whereas the immediate predecessor had a three-tube amplifier.

Occasionally, a new car will be added to a train just before passing a hotbox detector. The new car would have cold journals and therefore be missed on a wheel count. If this condition was allowed to go unchecked, the axle count to an overheated journal would be inaccurate. To correct this, the Pulse Processor puts out a pedestal pulse each time it is gated "on." The pedestal pulse is added to the heat signal, so the recorder's readout is the sum of the pedestal pulse and heat signal. When a cold journal is scanned, only the pedestal pulse amplitude is recorded, so the wheel count is continued from the gating provided by the Directional Data Control unit.

The Directional Data Control plug-in module coordinates the directional and timing pulses from the transducers, and starts the proper systems. So, two functions are performed by the Directional Data Control: gating and actuation of system controls.

Human eyes and ears help determine when a train is near and which direction it is moving. The directional Data Control unit is the brain of the hotbox detector. It gathers information from the eyes and ears, or transducers, tells the Pulse Processors when to operate, and signals the scanners to open their eyes or aperture blades. The Directional Data Control also controls the scanner heaters, recorders, and gates the Pulse Processors to receive heat signals.

The different heat amplitudes are all fed to the High Deflection Indicator. This system uses tunnel diodes to activate alarms when the journals are too hot.

A tunnel diode is a solid state device that develops a high voltage when more than 1 ma flows through it. The high voltage developed is used to drive a transistor into saturation. The high current from the saturated transistor is used to close a relay and activate the alarm circuits.

When no train is present, it is possible to test the entire system from the Test Panel to assure accuracy and proper function.

The Test Panel creates synthetic heat and transducer pulses, which are actually voltage pulses, and sends them to the Pulse Processors and Directional Data Control units. From those stages, the respective signals are returned to the Test Panel for exhibition on the panel meter where they represent the programmed pulses.

The Integrity Verifier helps to assure that alarms will not be due to equipment failure. The chances of a hot journal passing without detection are almost nil if a verifier check has shown all systems to be working properly.

With the Integrity Verifier test, every function in the hotbox system is tested except the transducers. There is only one condition when the verifier will not perform a check. It is electrically disconnected if a train is on the tracks, and will not perform a test under those conditions.

An Auto Test Timer may be incorporated with the Integrity Verifier. The Auto Test Timer performs a system check automatically if no tests have been performed within an hour of the last test. A motor driven magnet closes a reed switch every hour. The reed switch bypasses the verifier "on" switch and performs its own test. The Auto Test Timer also monitors its own test as it is being performed and fires the alarms if it finds a fault.

Not only do the hotbox detectors see with their scanners and transducers, they can think about what they see and indicate to the proper personnel if there is trouble or not. By self checks, they can determine their own health, but they still need signalmen to keep them in good health.

Like any good piece of equipment, the hotbox detection system needs the human touch to keep it functioning. Even though the system's rack assembly, which is its brains, can process, interpret, and display the results, it cannot fix or build itself.

Here in Southern Pacific's System Signal Wire Shop in Sacramento, if one item, such as hotbox houses, was all we wired, an assembly line could be developed. But because we do all kinds of houses and cases, no simple pattern is practical.

The number of men assigned to any job depends completely on how soon the work must be completed. If hotbox houses are the order, several men may be assigned to work on that particular job. But each signalman will usually be given a house to wire from the ground up.

The panels for the relay bases must be constructed from scratch. Once the bases are mounted, they are wired and relays installed.

AC wiring is installed in the house as part of our process. Components for the house which we install include: conduits for the wire, the fan for ventilation, a thermostat to operate the fan, and a POKE light (POKE stands for Power off Indication Light). There are two fans to be placed: one is the electric fan in the side of the house, the other is a wind driven fan on the roof of the house.

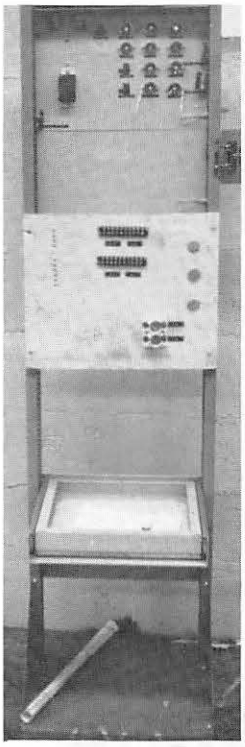
Once the house has been wired, everything is checked out and hopefully okayed by our shop Signal Inspector. Once okayed, the relay panel and detector's brain, the rack assembly, are placed inside the house with all of the outside components, such as scanners and transducers, and shipped to the installation sight. After final installation and checks have been made, the hotbox detector is ready for work.

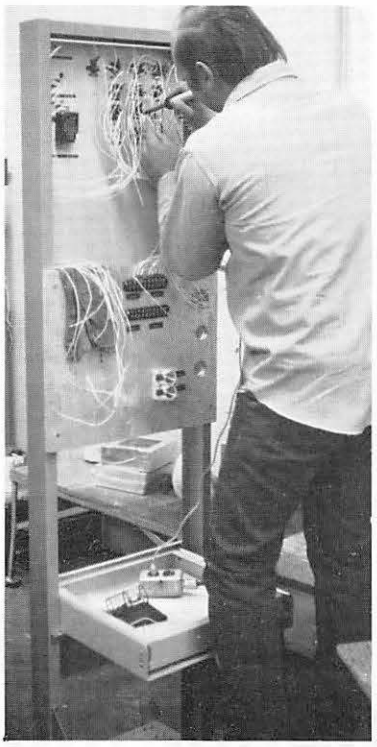
Some human replacements have failed outright or have been only partially successful. But Southern Pacific has had a great deal of success with its hotbox detector system. Accidents and potential losses to life and property due to journal fires have been greatly reduced.

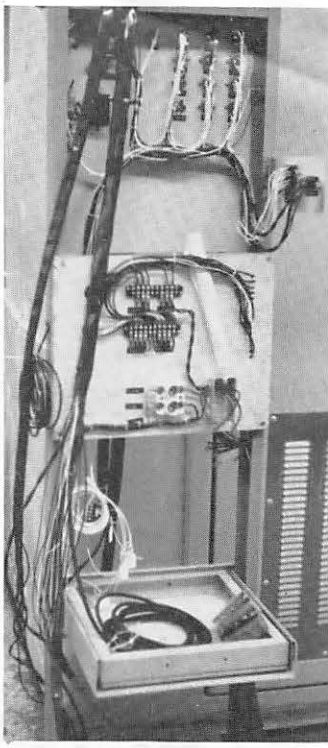
There are many such protective devices for railroads. Hopefully, the future will see even better systems. As the various railroads continue to stress safety first, science will gain more respect for helping to bring about an extremely high safety factor.

wired in shop

Larry F. Holmes, member Local 170, begins construction of a relay rack for HB detector.

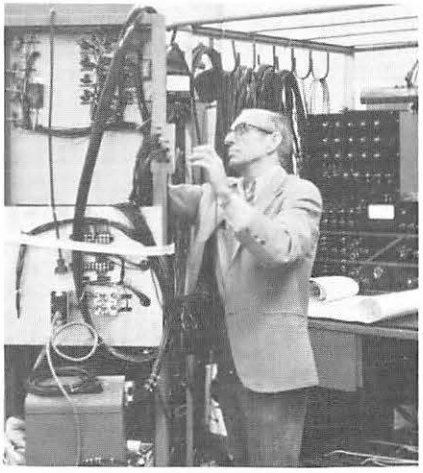


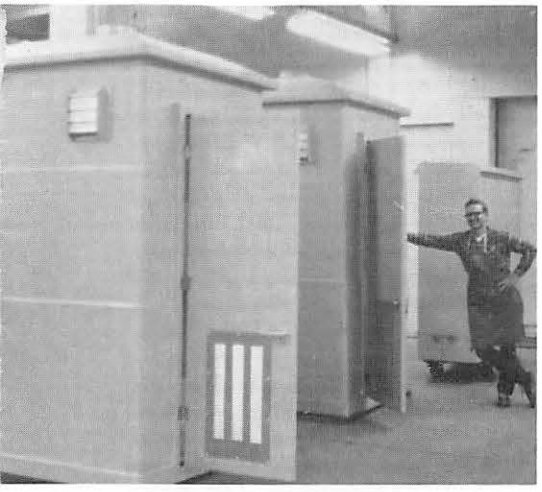




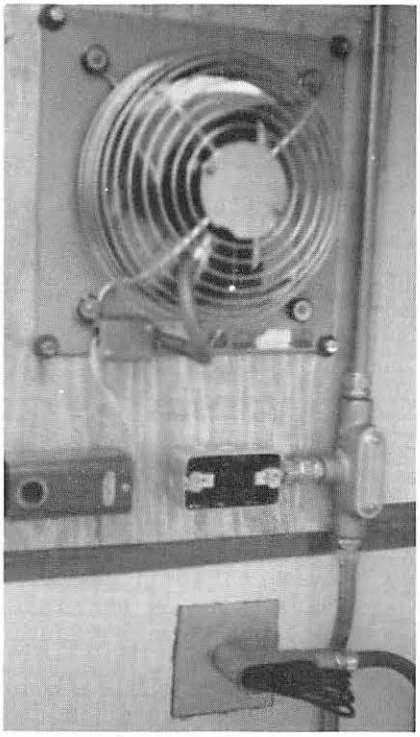
Relay rack (left) is ready for wiring. **Ronald C. Reneau,** member BofRS Local 170, wires a relay panel (center). Rack is ready for inspection.

George Winneagor, signal inspector, checks wiring of completed hotbox relay rack.

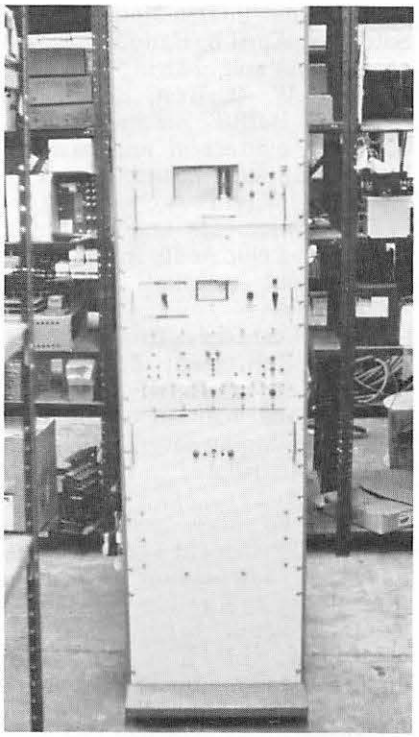




Michael H. Sutton, member Local 170, stands by houses to show relative size.



Electric fan has thermostat control for house ventilation.



Servo rack assembly shows recorder behind top window. Meter in the middle is on the test panel. Plug-in modules are below the test panel.

W. D. Best, BofRS, research director, chaired regional meeting.

Claim handling aired at regional meeting

Over 100 people attended the regional meeting of the Brotherhood of Railroad Signalmen at the Savery hotel in Des Moines, IA on Saturday, April 6. Handling the arrangements and chairing the meeting was **W. D. Best,** director of research, BofRS. Eleven speakers discussed matters of mutual interest ranging from insurance and retirement benefits to policing of BofRS agreements and the latest news of developments in the labor-management railroad retirement discussions.

Elbert Cranford, office manager, Railroad Retirement Board, commented on railroad retirement changes and had an information packet containing several RRB publications distributed to members in attendance.

W. L. Edwards, assistant vice-president, Provident Insurance Co., explained how claims should be filed under the employees supplemental sickness benefit plan. He emphasized that if a person has doubts about his qualifications, he should file anyway.

George Rerat, attorney and partner in the firm of Rerat, Crill, Foley & Boursier, stressed how important it is to make a personal injury report, no matter how minor the injury because it may reoccur after it has apparently healed. He also stressed the importance of seeing a doctor so that a record of the injury and treatment are available to sustain the claim. For a serious injury, legal advice is also desirable.

S. H. Stotts, supervising inspector, signals and train control, Federal Railroad Administration office at Kansas City, MO, praised BofRS officers and members for their efforts to increase safety on the railroads.

"The Brotherhood of Railroad Signalmen is one of my favorite organizations. I was once a member of the BRS, as was my father and an older brother. I am proud that my eldest son, Paul, is also a member and is represented most ably by General Chairman **Frank White,** who is in attendance here this morning.

"The Brotherhood of Railroad Signalmen and the Federal Railroad Administration have one goal that is common to both organizations—safety of train operation. The FRA is striving on many fronts to improve and insure this safety," Stotts said.

"The Track Safety Standards are now fully implemented, and we are in the process of staffing our Maintenance of Way Branch with the Track Inspectors necessary to assure compliance with the Standards. We expect, and are now beginning to see, increased activity in the maintenance of track on American Railroads. Signal systems are no better than the track they govern. The improvement of track conditions will certainly alleviate the workload of many signal maintainers.

"Rules and Instructions covering rail-highway crossing protection have been drafted and are now being studied by our legal staff. I am unable to give you any estimation of when they will become effective.

"I understand that Rules and Instructions for Use of Radios on Railroads will soon be sent to the Federal Register and should be effective some time this summer.

"The FRA is considering standardizing Operating Rules Nos. 26, the Blue-Flag Rule; Rule 93, the Yard Limit Rule; and Rule 99, the Flagging Rule. We also have a committee studying all of the operating rules, and their report and recommendations are expected early next year," Stotts said.

"The FRA is considering qualification of locomotive engineers. It is felt that enginemen and those engaged in train operations should meet federal requirements similar to those required of airline pilots.

"An important area of consideration involves alcohol and drugs. Alcohol is the most abused of all drugs and there are more than 90 other drugs, which when mixed with alcohol have most unpredictable and detrimental effects. Several railroads have recently started rehabilitation programs for employees with alcohol problems. We are considering rules governing the use of alcohol by employees—we aren't looking to remove the guy who has a beer for lunch, but we want the fellow who shows up for work half-smashed sent home. I would like to caution each of you to exercise much care in using alcohol," he said.

"At the present time, the Office of Safety and Health Administration Rules complaints are being investigated by FRA personnel, and upon determination of violations, handled by OSHA representatives. It still has not been determined whether OSHA or FRA will enforce these rules on railroads. However, no matter who finally enforces them, the working conditions for signalmen will be affected and vastly improved in many hazardous areas we have taken for granted as part of the job over the years," Stotts said.

Also, he mentioned that the railroad unions-FRA safety seminars have been very well received. Seminars have been held at Atlanta, Houston, New Orleans, Los Ange-

les, and Sacramento, and one will be held in St. Louis, MO at the Sheraton-Jefferson hotel on May 22.

Thomas Raitt, railroad claims supervisor, Travelers Insurance Co., outlined how to file claims, especially as regards to policies GA 23000 and GA 23111. He stressed the importance of providing full information on the first notice of a claim and especially to be certain that the correct Social Security Number is provided. Many claims are delayed, he said, because the check with the railroad's computer may not report a valid claim because of an incorrect social security number.

Open enrollment period for Group Policy GA-23111 for plans A, B, C and D is from June 1 through August 31 for furloughed and retired railroad employees and their dependents. This is a group hospital, surgical and medical insurance policy of the Travelers Insurance Co.

W. B. Harwell, grand lodge representative, BofRS, urged members to test and inspect to the extent of their ability, and cautioned signalmen not to fill out and sign test forms for the RS&I tests and inspections unless they actually had made them. Because of the press of work, especially with extended territories, men might be tempted to report tests that they had not actually made.

J. T. Bass, vice-president, described the difficulties of serving as a general chairman and also working for a railroad. He urged all members who are not represented by full-time chairmen, to change the siutation and elect full-time general chairmen.

M. B. Frye, vice-president, said that agreements between BofRS and the Carriers are becoming more complex. Also they provide more meaningful benefits, but it is important that these agreements be policed. This is the task of each member, as he is in the field where agreements are applied. He also urged members to support the efforts of their local and general chairmen to attend seminars sponsored by the Office of Safety and Health Administration and the Railroad Retirement Board.

R. T. Bates, secretary-treasurer, urged support for the Signalman's Political League. He asked for $2 per man, or more, but pointed out that it is a purely voluntary contribution. The money is spent to support candidates who are in favor of legislation that helps unions, and, of course, the BofRS. He also urged members to work as volunteers in the political campaigns of local, state and federal office seekers. He said that a call last year to retired members to support SPL received a tremendous response.

Special withdrawal cards are available for men who move up to supervisory or excepted positions but wish to retain their seniority in BofRS. They are being asked to pay half-rate dues.

Frank Petro, attorney with the firm of Henslee, Monek and Henslee, said that when sustaining a serious injury, it is most important to obtain legal aid from specialists in the field, namely those familiar with the Federal Employers' Liability Act (listed last month in THE SIGNALMAN'S JOURNAL).

Charles J. Chamberlain, BofRS president, reviewed the efforts of the rail unions and the Carriers in reaching agreement on the railroad retirement fund. He said that agreement would be reached (see separate story in this issue) between the parties, and it was especially important because the retirement fund would be exhausted by about 1982 unless something was done. It's simply a matter of paying out more than is being paid in by working members. About 600,000 pay in, but there are 980,000 persons receiving checks from the fund each month. He urged members to write their Senators and Representatives to support the bill that is being drafted by the Labor-Carrier conference committee.

He reported that there is a new attitude on the part of rail management to cooperate with labor, and hopefully, there will be talks about wages beginning shortly. Section 6 notices can be served this July. Indications are that labor and management may be able to come up with a wage and health and welfare package before the end of the year. For wages, a cost of living formula is being considered, and for health and welfare, provisions for eyeglasses and dental care are being taken into account.

He announced that a BofRS committee is working on developing RS&I rules for highway-railroad grade crossing protection equipment. Chamberlain also said that work should begin on general revisions of the present signal RS&I to make them conform to the up-to-date signal systems and equipment now being installed. Also, he said that names of signalmen who are interested in becoming FRA signal and train control inspectors should be submitted along with their qualifications and work experience to Grand Lodge headquarters. He will pass the names along to FRA. He said that four new S&TC inspector positions would be filled as well as three vacancies.

C. J. Chamberlain (right) said labor management relations are better.

He announced that **W. D. Best,** director of research, had been appointed vice-president midwest, to fill the vacancy created by the death of **G. F. Harper.** Also, **John E. Hansen,** vice-general chairman, Chicago & North Western, has been appointed director of research.

Commenting on the labor-management committee that includes chief executives of major railroads and rail union presidents, (of which he is a member), Chamberlain said the committee meets monthly in Washington for informal talks about what to do to make the railroad industry better. He said the railroad presidents have a receptive ear, and they realize that improvements must be made in labor-management relations at the lower levels, especially in the supervisory and middle management ranks. On labor's part, employees should do an honest day's work, show cooperation, initiative and above all show responsible unionism. It's a two-way street, and both labor and management can profitably walk that street.

Following the meeting, a social hour and buffet lunch was served, hosted by the law firms of Henslee, Monek & Henslee, and Rerat, Crill, Foley & Boursier.

Sec. 236.384 Cross protection.
Cross protection shall be tested at least once every three months.

Sec. 236.385 Time releases and timing relays.
Time releases and timing relays shall be tested at least once every three months. The timing shall be maintained at not less than 90 percent of the predetermined time interval, which shall be shown on the plans or marked on the time release or relay.

Sec. 236.386 Restoring feature on power switches.
Restoring feature on power switches shall be tested at least once every three months.

Sec. 236.387 Movable bridge locking.
Movable bridge locking shall be tested at least once a year.

Sec. 236.476 Interlocking inspections and tests applicable to traffic control systems.
The inspections and tests prescribed in Sec. 236.377 to 236.380, inclusive, and 236.382, 236.383, 236.385, and 236.386 shall apply to traffic control systems.

Inspection & Tests: Rdway.

Sec. 236.576 Roadway element.
Roadway elements, except track circuits, including those for test purposes, shall be gaged monthly for height and alinement, and shall be tested at least every 6 months.

Sec. 236.577 Test, acknowledgment and cut-in circuits.
Test, acknowledgment and cut-in circuits shall be tested at least once every six months.

Inspection & Tests: Loco.

Sec. 236.586 Daily or after trip test.
The automatic trainstop, train control, or cab signal apparatus on each locomotive operating in equipped territory shall be inspected and tested either once every 24 hours or within 24 hours before departure upon each trip, except that such inspection and tests of the automatic train stop, train control or cab signal equipment on Diesel-electric and electric locomotives shall not be required provided that periodic tests be made on such locomotives each 6,000 miles, or at intervals of not more than 2 months whichever shall occur first.

Sec. 236.587 Departure test.
A test of the automatic trainstop, train control, or cab-signal apparatus on each locomotive, except locomotives and multiple-unit cars equipped with mechanical trip stop only, shall be made over track elements or test circuits or with portable test equipment, either on departure of locomotive from its initial terminal, or, if locomotive apparatus is cut out between initial terminal and equipped territory, prior to entering equipped territory, to determine if such apparatus is in service and is functioning properly. If a locomotive makes more than one trip in any 24-hour period only one departure test shall be required in such 24-hour period. If departure test is made by an employee other than engineman, the engineman shall be informed of the results of such test and a record kept thereof.

Sec. 236.588 Periodic test.
Except as provided in Sec. 236.586, periodic tests of the automatic train stop, train control or cab signal apparatus shall be made at least once every three months, and on multiple-unit cars as specified by the carrier, subject to approval by the FRA.

Sec. 236.589 Relays.
At least once every 4 years each relay shall be removed from service, subjected to thorough test, necessary repairs and adjustment made, and shall not be replaced in service unless its operating characteristics are in accordance with the limits within which such relay is designated to operate.

Sec. 236.590 Pneumatic apparatus.
Automatic trainstop, train control, or cab signal pneumatic apparatus shall be inspected and cleaned at least once every 24 months.

Why 19

Servo is the world's leading producer of electronic hot box detector systems.

We're not experts in every phase of railroad safety — but as the industry's pioneer designer and producer of electronic hot box detection systems, we can claim a high level of successful experience in working on the problems of bearing failures, axle burn-offs and derailments associated with undetected hot boxes.

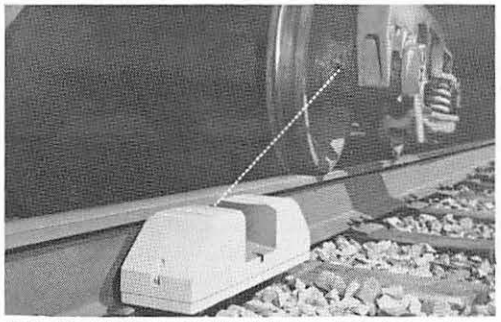
Since 1957, more than 1,800 SERVOSAFE Hot Box Detective Systems have been put into service, and have compiled an unequaled record of safety improvement, more efficient preventive maintenance procedures and cost reduction.

Hot box detectors available from Servo offer the widest flexibility in choice of system configuration, features and functional options, including: rail-mounted or ballast-mounted scanner; a complete selection of ancillary and test equipment; solid-state electronic signal processing. Several modes of data read-out are also available — automatic digital read-out at trackside or remote location; pen-paper recorder chart for visual interpretation; FM carrier data transmission over unlimited distances.

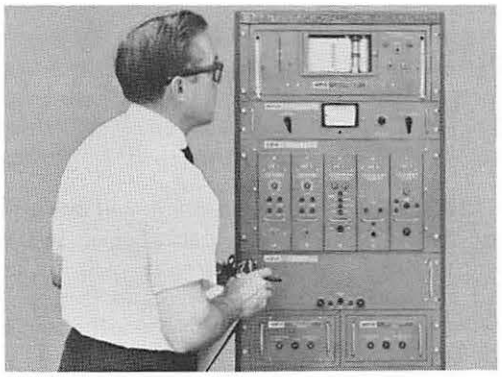
With our broad range of products and world-traveling network of field engineers, we can readily "customize" the design, manufacture, installation and operation of a SERVOSAFE System to best meet the particular requirements of your railroad.

You are invited to contact us for complete descriptive literature, or to arrange a field engineering site survey and application review — without obligation, of course.

are 71 railroads in countries using SERVOSAFE®?



Rail-mounted scanner "looks" at and measures the heat radiated by passing journal boxes.



Solid state electronic data processing equipment, with permanent record chart recorder.

Trackside display board gives digital read-out of hot box location.

Because today's faster, heavier trains—running for longer distances between inspection stops—have placed even greater emphasis on one of railroading's oldest problems: the overheated journal box. Wheel bearings are operating under more stress, and are more vulnerable.

Technological developments such as better lubricants, improved bearing designs and lubricator pads have all been employed by railroad managements to help solve the problem. Another significant step taken has been the increasing use of roller bearings. While these advances have helped, they have also made traditional methods of journal box inspection extremely difficult. The smoking oil fire indicating a friction bearing hot box is now a rare occurrence. A roller bearing that is about to fail seldom gives a warning sign that can be seen by eye. An automatic method for detecting hot boxes has become a necessity. The SERVOSAFE® Hot Box Detective™ System meets today's needs by providing for the automatic location of bearings that are running hot, so that action can be taken promptly after detection.

Railroads use SERVOSAFE simply because it has proved itself, in actual field service, to be the most practical, most effective method of combatting costly damage and derailments caused by defective overheated bearings.

Want more reasons why you should have SERVOSAFE on your railroad? Write or phone today.

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Serving Safety Through Science

MEMBER RPI

Unions and railroads agree on how to

Railroads and rail unions have agreed on recommendations to Congress aimed at solving problems threatening the solvency of the Railroad Retirement System.

Worked out in negotiating sessions held at the direction of the Congress, the recommendations to modify the federally administered system include proposals with respect to a new benefit formula, certain benefit improvements, and so-called "dual benefits"—under which some railroad employees have received benefits from both the Railroad Retirement and Social Security systems.

The principal goal of the recommendations is to avert the predicted bankruptcy of the retirement fund. The fund now stands at some $4.5 billion, but the Railroad Retirement Board has projected that it would be exhausted sometime during the early 1980s. This warning echoed the conclusion, in 1972, of a special Commission on Railroad Retirement created by Congress to examine all aspects of the system.

In addition to the projected depletion of the fund, the Commission pointed to inequities in the Railroad Retirement structure and to the need for a simplified and improved benefit formula. Congress directed the railroads and unions to consider these matters as well as the anticipated fiscal collapse of the system.

A principal recommendation of the joint rail-union group relates to dual benefits. The Commission on Railroad Retirement recommended that these benefits be phased out gradually in order to protect existing employees and beneficiaries. The joint rail-union group agreed in general with this recommendation.

Moreover, the joint rail-union group recommended that the existing financial interchange between Social Security and Railroad Retirement be adjusted so that the part of dual benefit costs heretofore borne by the Railroad Retirement account would be shifted to the Social Security fund during the phase-out period. The negotiating group pointed out that this adjustment would be more equitable than the existing arrangement because the dual benefit is a Social Security benefit and because the Social Security System pays similar dual benefits to employees under the Federal Civil Service retirement program as well as under certain state and local government employee retirement programs.

The new formula for computing the benefit of employees who retire after January 1, 1975, is a blend of the old formula with the type of retirement program found in other industries. An eight-year "grandfather" provision, tied to the old formula, is proposed to smooth the transition. In addition, the proposal contains a cost-of-living feature similar to that recently adopted in the aluminum industry.

Among the benefit improvements

Labor-management recommendations for retirement system legislation are briefly described

1. Unified Railroad Retirement System, administered by the Railroad Retirement Board, comprised of a basic social security portion and a basic railroad retirement portion, to become effective January 1, 1975.

2. New benefit formula for the basic railroad retirement portion, based on a combination of (a) service prior to changeover date including an additive for each year of prior service and (b) for service after changeover date ½% of future average monthly taxable compensation, plus $4, for each year of service subsequent to changeover date. The new formula is designed to provide increased benefits for most career railroad employees retiring during the next several years. Moreover, a "grandfather" provision guarantees that those retiring during the next eight years will receive not less than the benefit computed under the current railroad retirement formulas and the current limit on creditable compensation. The formula also provides for four annual cost-of-living adjustments ranging from 32.5% to 65% of the increase in the Consumer Price Index in the year preceding each annual benefit increase. The first cost-of-living adjustment for beneficiaries on the rolls will be effective July 1, 1977, and for employees in active service the first cost-of-living adjustment will be effective January 1, 1978. As to the basic Social Security portion, which under the new formula will include both railroad and social security service and compensation, future increases in Social Security benefits will be applied on a 100% basis.

3. Dual benefits will be gradually phased out. Beneficiaries on the rolls will continue to receive their full dual benefits. The "nonwindfall" portion of the benefits will be transferred to the basic Social Security portion, thereby being subject to full future Social Security increases, and the "windfall" portion of such benefits will be frozen. Employees who have a current connection, or who as of January 1, 1975 have 25 years of railroad service, and who are dually vested will have a dual benefit calculated as of changeover date, divided into "nonwindfall" and "windfall" portions and treated in the same way as dual beneficiaries on the rolls, except that during the years between changeover date and date of retirement the "windfall" portion will be increased by future Social Security cost-of-living increases. Upon retirement the "windfall" benefit will be frozen. Inactive nonretired dually vested employees will be

save the Railroad Retirement System

recommended by the joint rail-union group are full benefits, including supplemental annuities, to employees who retire early—at age 60, with 30 years' service—and full spouse annuities to their spouses when they reach age 60. Another improvement increases the benefits accorded to widows and other survivors of railroad employees.

Finally, the negotiating committee recommended that Congress continue a limitation on employee contributions to the level of Social Security taxes. The railroads would bear the cost of the pension benefits to the extent that they exceed Social Security benefits.

This tax arrangement was established through December 31, 1974, in legislation enacted last year. Prior to that, employees shared the additional costs of Railroad Retirement equally with railroads.

The negotiating committee concluded that, if the recommendations were put into effect, the Railroad Retirement System would be placed on a financially sound basis.

In a letter to Representative Harley O. Staggers, chairman of the House committee on Interstate and Foreign Commerce, and also to Senator Harrison A. Williams, Jr., chairman of the Senate committee on Labor and Public Welfare, the Joint Labor-Management Railroad Retirement Negotiating Committee reported that they had reached tentative agreement and that work was underway on draft legislation. Among the signers of the letter was Charles J. Chamberlain, president, Brotherhood of Railroad Signalmen, and chairman, Railway Labor Executives' Association. Abstracts from the letter follows:

The resulting group of recommendations are interrelated in the sense that, taken together, they represent the parties' view of the most reasonable accommodation of all relevant interests. The parties strongly urge the enactment of these recommendations into law.

We now turn to discussion of the most significant of our recommendations. Our charge, as we understood it, was to formulate, through mutual agreement, a set of recommendations that would, first, place the Railroad Retirement fund on a sound financial basis, and, second, remedy existing inequities in the Railroad Retirement System —the two general areas explored by the Commission on Railroad Retirement. Our approach to these problems is as follows:

Dual Benefits. Resolution of the so-called "dual benefit" problem is central both to insuring the fiscal soundness of the fund and to establishing equitable retirement benefits for all railroad employees. Alone among workers in the private sector of the American economy, railroad employees have been permitted by law to qualify for, in substance, two social security benefits—one as a component of their railroad retirement benefit and

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similarly treated, except that the dual benefit will be determined on the basis of earnings and service up to the end of the year in which the employee last worked in the railroad industry, provided he had sufficient quarters of coverage to qualify for a Social Security benefit as of the end of such year.

4. Financial Interchange with Social Security to be adjusted to relieve the Railroad Retirement system of the cost of dual benefits during the phase-out period.

5. Limitation, corresponding to Social Security principles, on benefits in cases in which both husband and wife are railroad employees entering service after December 31, 1974.

6. Benefit changes effective January 1, 1975:

(a.) Supplemental annuities to be payable to employees who retire after June 30, 1974 who have attained age 60 and completed 30 years of service, preserving existing qualifications.

(b.) Unreduced spouse annuities to be payable at age 60 to spouses of employees who retire after June 30, 1974 and who have attained age 60 and completed 30 years of service. Reduced spouse annuities to be payable at age 62 to spouses of employees retiring after December 31, 1974 at age 62 with less than 30 years of service.

(c.) Widow and survivor benefits based on overall Social Security minimum to be increased from 110% to 130% of Social Security survivor benefits.

7. Miscellaneous provisions:

(a.) Residual Railroad Retirement benefit to be frozen as of January 1, 1975.

(b.) Lump sum benefit to be frozen as of January 1, 1975 for retired and active employees; such benefits to be payable on Social Security basis for new entrants or for existing employees not entitled to such a benefit on such basis as of January 1, 1975.

(c.) Social Security earnings limitation to apply to only a defined portion of the Social Security component of benefits.

(d.) Employees not vested for dual benefits will receive at retirement any "excess" employee tax contributions.

(e.) Provision of a reasonable cap on benefits.

(f.) The Financial Interchange will be placed on an accrual basis in place of the present cash basis.

8. Employees will not be required to make any contributions to the railroad retirement fund in excess of social security tax levels. Any changes in Social Security benefits made effective after December 31, 1974 will be passed through to Railroad Retirement beneficiaries.

9. Neither the unions nor the carriers will propose or support any future changes in the Railroad Retirement Act to become effective before January 1, 1978.

another as a result of employment in another industry.

Moreover, as the Commission on Railroad Retirement pointed out, this results in a "windfall" to those workers who qualify under both systems. In the case of non-railroad employees, a single social security benefit is calculated on the basis of all service with all employers. In the case of a dual beneficiary, the total of his two social security benefits is larger than would be a single benefit based upon combined railroad and non-railroad employment, because the social security benefit formula has been weighted to afford proportionately larger benefits to low-wage and short-service workers. Even though they basically are social security benefits, the costs of those windfall benefits have been charged to the Railroad Retirement System, and this burden has played a major role in the projected financial crisis of the system.

The Commission on Railroad Retirement concluded that these windfall dual benefits are inequitable in the sense that a minority of railroad employees receive an advantage not available either to the majority of career railroad employees or to employees in other industries. The Commission was of the view, however, that any plan to eliminate windfall dual benefits should include protection of the equities of existing employees with claims upon such benefits.

We are in accord with these basic findings of the Commission. At the same time, we wish to make it clear that our recommendations on this subject—and we believe the Commission's recommendations—imply no criticism of dual beneficiaries, as opposed to windfall dual benefits. Dual beneficiaries were perfectly entitled to secure benefits provided under existing law. That is why their equities should be preserved.

But agreement in principle, while essential, does not provide a sure answer as to how the principle is to be applied to the facts of particular situations. The Negotiating Committee struggled for months over the question of how dual benefits could be phased out on an equitable basis. Our conclusions in the main, though not in all respects, accord with those of the Commission. Our recommendations are these:

First, the dual benefits of beneficiaries retired as of January 1, 1975, would continue to be paid in full. However, the so-called "windfall" part of those dual benefits—the part a beneficiary would not receive were a single social security benefit calculated on the basis of his combined railroad and non-railroad service and earnings—would not be subject to future social security increases. This is the approach recommended by the Commission.

Second, employees without sufficient railroad and non-railroad service by January 1, 1975, to have fully qualified under both systems would not be entitled to windfall dual benefits. All such employees, upon retirement, would receive a single benefit calculated on the basis of their railroad and non-railroad service. Again, this is what the Commission recommended.

Transition from dual benefits is orderly and cuts the projected deficiency

Our views differ from the Commission's only with regard to employees who have sufficient service to be fully qualified under both systems but who have not yet retired. Under our recommendations, this group would be divided into two classes. The first would be those employees with a "current connection" to the railroad industry—12 months of service out of the previous 30 months, as defined in existing law—and those with 25 years or more of railroad service even though without a "current connection." The Negotiating Committee feels that this group is entitled to be in the same situation as were the retired dual beneficiaries during their period of active service. Accordingly, those non-retired employees would receive future social security cost-of-living increases on their dual benefit until they retire. Upon retirement, however, the "windfall" part of the dual benefit would be frozen, as in the case of dual beneficiaries retired as of January 1, 1975.

The second group would be employees without a current connection to the railroad industry and without 25 years or more of railroad service. Such employees, the Negotiating Committee believes, have a less strong equitable claim than those who have remained with the industry. Accordingly, the Committee recommends that they not receive windfall dual benefits unless they had fully qualified under both systems by the close of the year in which they left railroad service. If they had so qualified at that point, then the Committee recommends that their windfall dual benefit, calculated as of the time they left railroad service, be subject to cost-of-living social security increases after 1974 and prior to retirement. Such windfall benefit would be frozen upon retirement, as is the case of the other beneficiaries covered above.

An employee who does not qualify for such a dual benefit will be entitled upon retirement (or his survivors if he should die before retirement) to a refund of employment taxes paid prior to January 1, 1975 in excess of what he would have paid if all his employment had come under the Railroad Retirement Act.

We have been advised by the Railroad Retirement Board that the projected deficiency of the Railroad Retirement fund, under the existing law, is 9.06% of taxable payroll annually, calculated on a level basis. Based on data supplied by the Board, it is estimated that these measures, if put into effect, would reduce that projected deficiency by about 2.5% of taxable payroll annually, calculated on a level basis.

A New Benefit Formula and the "Two Tier System." The Commission on Railroad Retirement recommeded that a new benefit formula be adopted. It believed that the existing formula was unduly complex and also that, projecting results over the next 30 years or so, the formula would produce benefits that would bear an unrealistic relation to wage levels. The Commission also recommended that a so-called "two tier" system be adopted, under which railroad employees would be brought directly under the Social Security System — the first "tier" — and would receive in addition a supplemental retirement benefit cal-

culated on a different basis—the second "tier."

The Negotiating Committee does not disagree in theory with the "two-tier" recommendation of the Commission. If the Railroad Retirement System had first been established in 1975, such an approach might very well have merit. However, railroad employees have lived for almost four decades under a different system. In such circumstances, it is our judgment that sharp changes in the form of the retirement structure should be avoided if possible. In particular, we consider it important, in terms of the confidence that employees repose in the system, that all the retirement benefits be administered by the Railroad Retirement Board. Accordingly, the Committee does not recommend adoption of a two-tier system in the sense visualized by the Commission.

On the other hand, the Committee does agree with many of the principles underlying the Commission's "two-tier" recommendation, as well as with its general observations about need for a revised benefit formula to replace the current railroad retirement formula. The Negotiating Committee believes that the basic goals set by the Commission can be met within the framework of the existing structure of the Railroad Retirement System.

The new Railroad Retirement formula, as recommended by the Negotiating Committee, would have as one major component a benefit calculated on the basis of the Social Security formula as applied to all of the employee's wages and service, non-railroad as well as railroad. All future increases in social security benefits would be applied, not only through this component of the new formula to people who retire after the increases, but also to people on the retirement rolls in the same way as if they were Social Security beneficiaries. Any new classes of Social Security benefits would be passed through to the Railroad Retirement System.

Under the financial interchange with Social Security, which we recommend retaining in place of direct Social Security payment and administration of this phase of the Railroad Retirement program, this Social Security component would be financed by Social Security as at present, and railroad employer and employee Social Security equivalent taxes would be transmitted to Social Security as at present. Therefore, these changes in the Railroad Retirement System would have no effect, one way or another, on the Railroad Retirement fund.

However, when taken together with the phase-out of dual benefits, we believe that these changes would accomplish the principal goal of the Commission's "two-tier" recommendation—a clear and permanent isolation of a Social Security component of Railroad Retirement benefits, from the additional component riding on top of Social Security and financed by the railroad industry. While the approach we recommend to attain that goal is different from the Commission's, we concluded, after prolonged consideration, that a large value should be placed upon preserving the long-established basic structure of the Railroad Retirement System.

This brings us to our recommendation with respect to the second part of the Railroad Retirement formula—the part that would ride above the Social Security level of benefits and that is commonly called a "staff" level of benefits.

New formula has cost of living escalation for retired and active employes

We agree, as noted above, with many of the Commission's criticisms of the existing formula, which is based strictly on career earnings, which is unduly complex, and which suffers from various anomalies. At the same time, we believe that, as a practical matter, the problem cannot be approached in disregard of the fact that the Railroad Retirement formula has been in existence for decades.

Accordingly, we have recommended as the second component of the new Railroad Retirement formula—the "staff" part—a future service formula under which this additional benefit would be calculated upon two factors, career railroad earnings and a flat dollar amount per year of service. In the Negotiating Committee's judgment, this formula would combine the advantages of the existing formula with the advantages of retirement benefit formulas prevalent in other industries, and in addition would not represent too sharp a break with the past.

Devising an appropriate transition from the old formula to the new formula was a formidable problem. The Committee was quite aware of the desirability of insuring that present employees would not be disadvantaged. Accordingly, the recommended formula first provides that benefits based on service prior to the changeover date will be computed under the old formula, so that the new formula will apply to future service only. The recommended formula also contains two transition elements—a special credit for service prior to January 1, 1975, and an 8-year "grandfather clause" applicable to all retirement benefits except dual benefits. Taken together, these features will insure that no employee retiring in the next eight years will receive less than he would under the formula as it exists today computed under the current limit on creditable compensation, and that, indeed, most career railroad employees retiring in the next several years will receive somewhat more benefits than under the old formula as so computed.

In addition, the new formula contains a cost-of-living escalation both for employees on the rolls and for active employees. As to the Social Security component of the formula, as noted above, the Social Security automatic cost-of-living increases, as well as any other Social Security improvements, would be passed through to railroad employees. As to the railroad benefit supplemental to Social Security—the "staff" benefit—there would be four cost-of-living adjustments during the six year period commencing January 1, 1975. For employees on the retirement rolls, the first of such increases would become effective for the month of June 1977 (payable as of July 1, 1977), and would be calculated on the basis of 32.5% of the preceding year's increase in the Consumer Price Index. There would then be

similar adjustments payable July 1 of each of the following three years. For employees in active service, the staff part of the benefit formula would first be adjusted on January 1, 1978, and the adjustment would be calculated on the basis of 65% of the preceding year's increase in the Consumer Price Index, with an offset for increases in maximum creditable taxable compensation. There would then be three similar adjustments in the following three years.

This introduction of a cost-of-living escalator is a recent innovation so far as major private industry pension plans are concerned. It is similar to the approach taken in the recent Aluminum Industry settlement, which was precedent-setting. After lengthy deliberation, the parties agreed that it would be appropriate to adopt the proposed cost-of-living escalator for a limited period. The new formula, together with the four cost-of-living increases for the six year period, represents on the one hand recognition of the fact that, under the basically new approach to the system the parties have recommended, the staff benefit program is closely analogous to private industry supplemental pension programs, and on the other hand the desirability of maintaining reasonable continuity in a federally mandated program.

Insofar as the deficiency is concerned, while of course the cost-of-living adjustments will entail costs in the future that, under the parties' recommendations, the railroad industry will have to assume at that time, at the present time the substitution of the new formula, even with its transition protective features, would reduce the deficiency by about 5% of taxable payroll per year on a level basis. The reason essentially has to do with certain features of the actuarial model used by the Railroad Retirement Board to project the financial state of the fund.

Benefit inequities. The Negotiating Committee recommends three benefit improvements designed to rectify inequities in the existing benefit structure.

The first two such improvements are aimed at making fully effective the early retirement provision of last year's legislation. Under that provision, an employee is entitled to retire with his full basic benefit upon attaining age 60, provided the employee has 30 years of service.

Benefit improvements are made to correct present inequities

However, the employee does not receive the so-called supplemental benefit—which ranges in net terms between $23 and $43—until the employee reaches 65, nor may the spouse receive any spouse benefit until the employee reaches age 65. This is a significant deterrent to early retirement. Accordingly, the Negotiating Committee proposes that effective July 1, 1974 an employee retiring at age 60 or thereafter with 30 years of railroad service would become eligible for the supplemental benefit, and spouses of such employees would be eligible for spouses' annuities upon reaching age 60. The cost of these changes would be approximately 1% of taxable payroll per year on a level basis.

The third change would increase the benefits received by widows and other survivors. At present, the vast majority of such beneficiaries receive benefits calculated upon the basis of 110% of the comparable Social Security benefit. The Commission on Railroad Retirement believed these benefits should be increased. The Negotiating Committee recommends that these benefits be calculated on the basis of 130% of Social Security rather than 110%. The increase would go to widows and other survivors now on the retirement rolls as well as to future beneficiaries. The cost of this increase in these benefits would be approximately 2% of taxable payroll per year on a level basis.

Phase-out Costs of Windfall Dual Benefits. The Joint Negotiating Committee, having recommended that windfall dual benefits be phased out in a way consistent with protecting equities of existing employees, also recommends that the financial interchange with Social Security be adjusted so that the Social Security fund, rather than the Railroad Retirement fund, will bear these phase-out costs of windfall dual benefits.

The Negotiating Committee regards this matter as bearing in an important way upon the question of equitable adjustments of the retirement system. The Committee, having examined this matter intensively for many months, believes that the existing financial interchange arrangement with Social Security, under which the costs of windfall dual benefits are charged to the Railroad Retirement account, has worked a grave injustice to the railroads and to their employees, who depend for retirement security upon the adequacy of the Railroad Retirement fund. Unless a proper allocation of these costs is now established, the Railroad Retirement fund will be jeopardized notwithstanding the economies that would be generated by the Negotiating Committee's other recommendations.

The background of the problem is this: In 1951, legislation was enacted that was designed to integrate, in a financial sense, the Social Security and the Railroad Retirement systems. Under that legislation, basically, an interchange of taxes and benefits between the two systems was established. Social Security was to receive from the Railroad Retirement system all employer and employee taxes calculated on the Social Security tax level. At the same time, Social Security was to reimburse Railroad Retirement for the cost of railroad retirement benefits to the extent that the beneficiaries, under the Social Security benefit formula, would have received Social Security benefits. In other words, the notion was that neither the Railroad Retirement System—by way of benefit costs—nor the Social Security System—by way of loss of tax income—would suffer by virtue of the fact that railroad employees were not formally under the Social Security System.

The only flaw in this interchange system—and it has now turned out to be a large flaw indeed—has to do with dual benefits. Consider the matter in terms of the following example: A railroad employee with 15 years of railroad service leaves the industry and works for another 15 years in an industry directly covered by Social Security. His and his railroad's Social Security taxes, and his and his new employer's Social Security taxs, are all transmitted to the Social Security fund. Upon retirement, he receives a Railroad Retirement benefit that

includes a Social Security component of, say, $125.00. He also receives a "dual" benefit by virtue of his non-railroad employment of, say again, $125.00. And, under the Social Security formula, the sum of these two benefits is greater than it would be if a Social Security benefit were calculated on the basis of combined railroad and non-railroad service. This "windfall" element might be, say again, $50.00.

Since all of the Social Security taxes on both his railroad and his non-railroad employment have gone to the Social Security fund, one might suppose that both the Social Security component of his Railroad Retirement benefit and his outside industry "dual" benefit would be paid for by Social Security. But that is not the way the 1951 legislation has been construed. Rather, though the Railroad Retirement fund receives none of the tax income, it has been charged with the windfall portion of those dual benefit costs. In reimbursing the Railroad Retirement fund, Social Security deducts the Social Security benefits that it has paid, so that the "windfall" element of those benefits serves to reduce the amount of the reimbursement to the Railroad Retirement fund that otherwise would have been made.

When the financial interchange was enacted in 1951, the Congress did not focus upon this matter. The cost of windfall dual benefits at that time was relatively small because of the previous state of Social Security legislation and of restrictions (since repealed) upon dual benefits. But in the intervening years the problem has grown dramatically, so that the result of this inequitable, in our view, distribution of costs has shorn the Railroad Retirement fund of some 4 billion dollars. To put it differently, the fund would be almost twice as large as it is today, and there would be no "crisis," had the Railroad Retirement System not absorbed the cost of the windfall dual Social Security benefits. It is plainly, we suggest, time for a change.

It is true that, if our recommendation were accepted, the Social Security System would pay to protected dual beneficiaries, during the phase-out period, more than it would pay to other employees with the same service and earnings. But, unless dual benefits were terminated immediately on January 1, 1975, in all respects, someone will have to pay for the phase-out costs. And no one, we're sure, would suggest immediate termination of dual benefits. Accordingly, the question becomes one of selection of the most equitable alternative.

Since the windfall dual benefit basically is a Social Security benefit and derives from Social Security service rather than railroad service, it scarcely would be appropriate to charge the costs against the railroads who have not benefitted from that Social Security service. And since, as the Commission observed, if employees are charged with part of the costs, the burden would fall in large measure upon long-term railroad employees—and all future employees—who are not advantaged by dual benefits, that alternative also seems thoroughly unattractive. The last, and most reasonable, alternative is to adjust the financial interchange so that the Social Security fund will bear these remaining dual benefit costs. At root, the dual benefit problem arises from a defect in the Social Security law. As with other such defects, it is appropriate that the expense of correction be carried by the Social Security fund. Moreover, there is persuasive precedent. Under the Federal Civil Service retirement program, as well as under certain state and local government employee retirement programs, employees can qualify for Social Security dual benefits. The full cost of such dual Social Security benefits is assumed by Social Security.

Placing financial interchange on a current basis. At present, the financial interchange is on a cash basis rather than an accrual basis. This results in an 18-month lag in transmittal to the Railroad Retirement fund of monies to which it is entitled. We perceive no just basis for this situation, and accordingly recommend that the interchange be placed on an accrual basis. This accords with the Commission's recommendation.

Financial interchange will be placed on a current basis

Incorporating the existing temporary features of the System. Beginning in 1970, and pending final resolution by the Congress of the problems besetting the Railroad Retirement System, benefit increases have been put into effect on a temporary, rather than permanent, basis. Those increases, three in number, aggregated 45%. On a cumulative basis, they aggregate about 52%. In addition, under last year's legislation, the carriers assumed, on a temporary rather than permanent basis, the Railroad Retirement taxes that the employees had theretofore paid above the level of Social Security taxes. Accordingly, the carriers' taxes went to a 15.35% level, and the employees' taxes dropped to a 5.85% level.

The Negotiating Committee recommends, as part of its overall program, that these temporary arrangements, both as to benefit levels and as to tax levels, be incorporated into the new law.

Interim changes in Social Security Benefits. As noted above, the Committee proposes a pass-through of Social Security changes subsequent to December 31, 1974. The Negotiating Committee also recommends that the currently applicable Railroad Retirement Act be revised to provide that the dollar amount of any increases in Social Security benefits which may be made effective subsequent to June 30, 1974 and prior to January 1, 1975 will be passed through to railroad employees and beneficiaries subject to an offset for dual benefits, and that any other changes in Social Security benefits during this period will be extended to railroad employees and beneficiaries.

Summary. These are the principal recommendations of the Negotiating Committee. There are a number of other recommendations, mostly of a technical nature and all of considerably lesser importance. Since one of our two main charges was to treat with the projected deficiency of the fund, we recapitulate at this point what the results in those terms would be were our recommendations accepted.

The recapitulation, based upon data supplied by the Railroad Retirement Board, is as follows: Coupling the existing deficiency of about 9% of taxable payroll, on a level basis, with the additional costs of rectifying the existing inequities respecting widows, spouses,

and supplemental benefits, the deficiency would be about 12%. However, the restrictions on dual benefits (about 2.5%), the new formula (about 5%), and the adjustment of the financial interchange respecting phase-out dual benefit costs (about 4%), together with a few other economies relating to other of our recommendations, should put the fund into a situation of long-term balance for the present. Under the recommended plan, additional costs would come into play in the future when cost-of-living increases are granted. Moreover, the next periodic valuation by the Railroad Retirement Board would of course be important. But the short of it is that, if the Negotiating Committee's recommended plan is put into effect, in the Committee's judgment the fund would be placed on a sound financial basis, and existing inequities would have been eliminated. Moreover, we wish to advise you that the parties have agreed that neither the railroads nor the unions will propose any future changes in the Railroad Retirement Act to become effective prior to January 1, 1978.

Conclusion. The Negotiating Committee is confident that its recommendations will be carefully considered by your Committee and the Congress, and is hopeful that such deliberation will demonstrate the soundness of the recommendations with respect to the merits of the issues involved. The Negotiating Committee is fully aware that, on one or another issue, positions contrary to the recommendations can be advanced. We are aware of that because, important and controversial as these issues are, such contrary arguments have in fact been forcefully advanced by the parties during the many months of our discussions. Our principal hope, in that respect, is that due recognition will be given to the fact that the final test of the legislation will be whether, taking all issues into account, it represents a fair and sound approach to a permanent reformation of the Railroad Retirement System.

Positions Open

Signal Maintainer positions open in Florida, South Carolina and North Carolina. **Contact J. R. DePriest, Superintendent Communications and Signals, Seaboard Coast Line Railroad Co., 500 Water Street, Jacksonville, FL 32202.**

News About Members

W. D. Best, director of research, has been appointed vice-president midwest, with headquarters at Mt. Prospect, IL, to fill the vacancy created by the death of vice-president G. F. Harper.

Brother Best was born in Gas City, IN on July 8, 1923. After graduation from high school, he joined the Pennsylvania Railroad as a helper in a telegraph and signal gang in December 1941. He advanced to signalman, maintainer and leading signal maintainer except for three years military service in the U.S. Air Force. In January 1963, Brother Best was appointed grand lodge representative. At that time he was a communication and signal maintainer at Marion, IN on the Pennsylvania. In 1969 he was appointed director of research at BofRS headquarters, a newly created position because of the need for compiling statistical data and information in connection with wage cases. In 1973, Brother Best was appointed vice-president to fill the vacancy created by the death of T.H. Gregg. Brother Best continued as director of research, until his present appointment.

Brother Best has been active in the BofRS since he joined in July 1942. He was a member of Local 146 and served as local chairman. Also he was vice-general chairman of the Pennsylvania General System Committee prior to his appointment to Grand Lodge in 1963.

NORFOLK & WESTERN: **H. L. Duff,** signal test foreman, and member of Wabash No. 55 local, retired March 27, 1973. Brother Duff lives at 785 Hamilton St., Barry, IL 62312. **Lonnie A. Williams,** signalman, and member of Goodwin Local No. 77, retired Nov. 24, 1973. Brother Williams lives at 2429 Berkeley Ave., S.W., Roanoke, VA 24015.

SEABOARD COAST LINE: **Gordon Owen Black,** signalman, system, and member Local 16, awarded a 25-year service emblem. Other members of Local 16 receiving 25-year service emblems are **Artimus Carlisle Davis, Jr.,** signal foreman, system; **Roland Ralph West,** signalman, Ocala, FL; and **George W. Yarborough,** signal maintainer, Sebring, FL. **Maurice G. Sweat,** member Local 16, and signal maintainer at Kingsland, GA, has retired.

John E. Hansen, relay inspector, Chicago & North Western, local chairman of Lodge 43 and vice-general chairman, C&NW general committee, has been appointed director of research.

BN and SOO gets ok for interlocking

Burlington Northern and Soo Line have received approval from the Railroad Safety Board, FRA, for the installation of an automatic interlocking to replace an existing mechanical interlocking at Erskine, MN where single-track lines of both railroads cross each other.

Personal Aids and News

Retirement Board forms are important to employees, says R. T. Bates

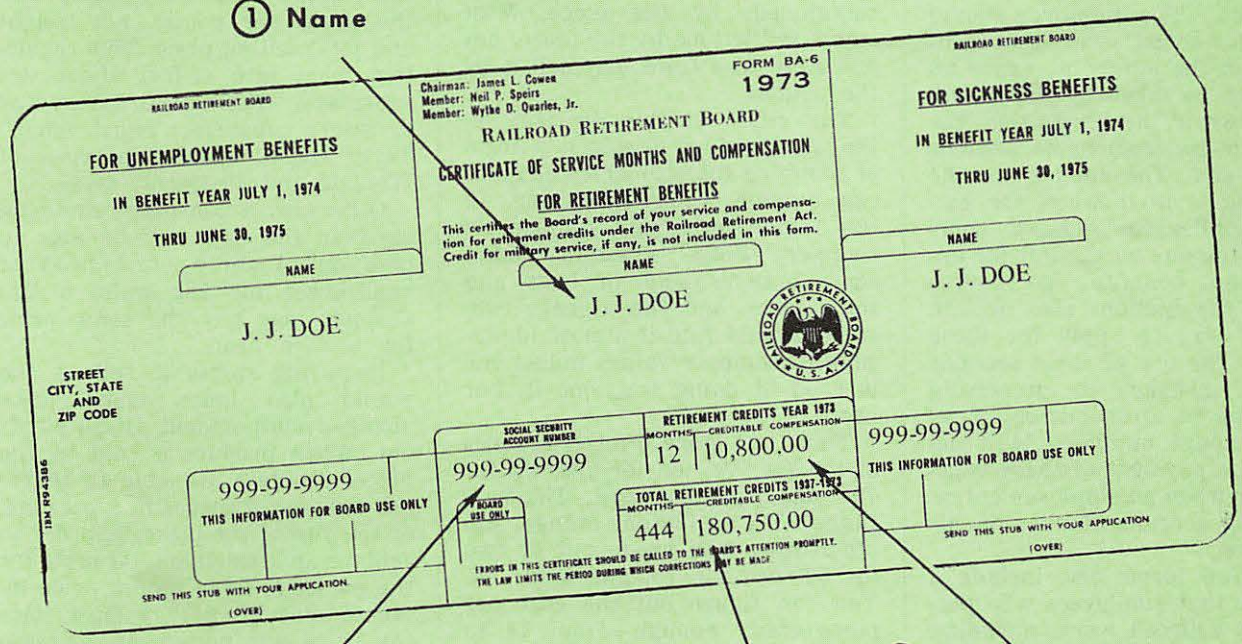
The U.S. Railroad Retirement Board recently completed the preparation of the annual statements of railroad service, "Certificate of Service Months and Compensation," Form BA-6, and is mailing them to railroads and other covered employers for distribution to employees. These annual statements are important because they provide an employee with a record of his railroad service and compensation in 1973, as well as his cumulative railroad credits after 1936. The statements are also used by employees when they apply for certain benefits with the Board.

Some 650,000 BA-6 forms will be distributed. They will go primarily to employees who qualify for unemployment and sickness benefits in the benefit year beginning July 1, 1974 on the basis of their 1973 employment. Employees who worked in 1973 but did not have sufficient earnings to qualify for unemployment and sickness benefits will also be sent a BA-6 form if they had service in each month in 1973, or if they worked for a local lodge or division of a national railway labor organization.

Individuals who do not have 1973 railroad employment as described above, may still be issued a

(Please turn page)

What Employes Should Check on Form BA-6


① Name
RAILROAD RETIREMENT BOARD
FOR UNEMPLOYMENT BENEFITS
IN BENEFIT YEAR JULY 1, 1974
THRU JUNE 30, 1975
NAME
J. J. DOE
Chairman: James L. Cowen
Member: Neil P. Speirs
Member: Wythe D. Quarles, Jr.
FORM BA-6
1973
RAILROAD RETIREMENT BOARD
CERTIFICATE OF SERVICE MONTHS AND COMPENSATION
FOR RETIREMENT BENEFITS
This certifies the Board's record of your service and compensation for retirement credits under the Railroad Retirement Act. Credit for military service, if any, is not included in this form.
NAME
J. J. DOE
RAILROAD RETIREMENT BOARD
FOR SICKNESS BENEFITS
IN BENEFIT YEAR JULY 1, 1974
THRU JUNE 30, 1975
NAME
J. J. DOE
STREET
CITY, STATE
AND
ZIP CODE
999-99-9999
THIS INFORMATION FOR BOARD USE ONLY
SOCIAL SECURITY ACCOUNT NUMBER
999-99-9999
RETIREMENT CREDITS YEAR 1973
MONTHS
CREDITABLE COMPENSATION
12
10,800.00
TOTAL RETIREMENT CREDITS 1937-1973
MONTHS
CREDITABLE COMPENSATION
444
180,750.00
BOARD USE ONLY
ERRORS IN THIS CERTIFICATE SHOULD BE CALLED TO THE BOARD'S ATTENTION PROMPTLY. THE LAW LIMITS THE PERIOD DURING WHICH CORRECTIONS MAY BE MADE
999-99-9999
THIS INFORMATION FOR BOARD USE ONLY
SEND THIS STUB WITH YOUR APPLICATION.
(OVER)
SEND THIS STUB WITH YOUR APPLICATION
(OVER)
IBM RO4386
② Social Security Number
③ Service and Compensation Credited Under Railroad Retirement Act in 1973
④ Total Service and Compensation Under Railroad Retirement Act, 1937-1973

RRB FORM

(Continued)

BA-6 form, but they must write the Board requesting one.

Most employees should receive their BA-6 forms by June 1. If an employee does not receive a form by that date and would like to have one, he should write to the Board. After receiving his BA-6 form, each employee should check to see whether his own record of service and creditable compensation agrees with the Board's figures. The important figures that should be checked are indicated on the illustration of the form. If the employee decides that the information shown is not correct, he should report this fact in a letter to the Board as soon as possible. In checking the spelling of the name, it should be kept in mind that the form contains only the first ten letters of the last name.

All letters concerning BA-6 forms should be addressed to the DIRECTOR OF DATA PROCESSING AND ACCOUNTS, U.S. RAILROAD RETIREMENT BOARD, 844 RUSH STREET, CHICAGO, ILLINOIS 60611. The employee should include his social security account number in the letter, otherwise no action can be taken by the Board.

As shown in the illustration, the BA-6 form has detachable sections at each end. The section on the right side is used when the employee applies for sickness benefits, and the one on the left for unemployment benefits. The reverse sides of the sections also explain the best way to apply for these benefits. The use of these sections prevents mistakes in processing claims due to erroneous social security account numbers. Most delays in the payment of these benefits occur when an employee enters the wrong account number on his application.

The BA-6 forms also include a reminder that employees who perform any railroad work, including work for a railroad union, after their closing date, permanently losing their eligibility for a railroad retirement supplemental annuity. For the great majority, the closing date is the last day of the month following the month in which the employee attains age 65. The Board suggests that employees age 63 or older contact the nearest Board office for help in establishing proof of their age. This will insure them against forfeiting their eligibility through miscalculation of their age. Establishing the correct date of birth is also important for Medicare enrollment.

How to buy produce

By Sidney Margolius

Some produce is sold by the pound, like cabbage, and some, like lettuce, by the unit or piece. You need to use scales when you buy produce by the piece.

In one survey we found, for example, that you can get anywhere from 14 oz to 22 oz of lettuce all at the same 39¢, depending on which head you select. You may pay 25¢ for a cucumber and get from 10 oz to 14 oz.

There seems to be no rhyme or reason, other than tradition, for the different ways different varieties of fruits and vegetables are sold. Thus, in a price check last summer we found one store selling Cranshaw melons by the pound but cantaloupes by the piece. Most stores sell lettuce by the piece, but one store in a town may sell it by the pound.

The effect of this disparity in the way produce is sold is a form of shopping roulette which at times can become wholly confusing. In the same stores our comparison shopper, Betty Preston, found some oranges sold in bags and some loose, and the average consumer would find it almost impossible to compare values unless she is good at doing fractions in her head.

Thus, one store offered oranges at ten for 79¢, ten for 69¢, six for 79¢ and five for 59¢. That's a range of 7¢ to 13¢ per orange. Another store had grapefruit at two for 59, two for 75, and 5 for 69. You can figure out the cost per piece easily enough—from 14 to 38¢. But you couldn't begin to know which was best value unless you stopped to weigh them.

At other times we have found such disparities as celery, all the same 35¢, but varying in weight from 21 oz to 27 oz, and honeydew melons at 79¢ ranging from 4 lb. 2 oz to 3 lb, 14 oz. Sometimes, no two pieces of the same vegetable item may weigh the same.

Other differences in selling methods further confuse consumers. Potatoes, tomatoes and carrots are sold by the pound but sometimes by the carton, and cherry tomatoes are sold by volume.

Sometimes merchants may even try to sell by the piece some products usually sold by the pound, such as tomatoes, reports Saul Wax, researcher for the Massachusetts Consumers' Council.

The price also may be affected by the package. One store had grapefruit at three for 79¢ but two grapefruit in a tray pack cost 58¢.

In the 1940s, the government did require, as part of its wartime price control program, that all produce be sold by weight. But that requirement disappeared after the war.

In 1965, Esther Peterson, then the President's Consumer Assistant, pointed to the need for such pricing when she reported she had found such examples as two heads of lettuce at the same price, one weighing a pound and the other almost twice as much.

As far as we know, only one city —Chicago—requires that all fruits and vegetables prepackaged by the retailer must be marked with the price per pound, net weight and total selling price. This regulation went into efffect about two years ago. "This is the fairest way to assure consumers equal value," Terry Hocin, Chief Supervisor of Weights and Measures, says.

Otherwise a consumer shopping early in the day may be able to pick out a three-pound head of cauliflower for 79¢ while a late shopper may pay the same price for a 2 lb head.

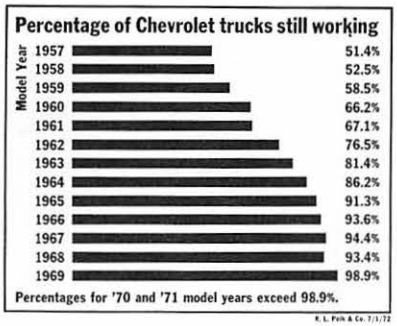
Requiring stores to sell by the pound also helps make price changes more evident, Hocin points out. When produce is sold by the piece, retailers are able to juggle the number of pieces in a package, or the size of the piece, in order to achieve an attractive total price for the package, or to hide a price increase. But when they must state the price per pound, an increase from, say 29 to 39¢ a pound, becomes readily evident.

Several other states and areas also usually sell at least most produce by weight, either by law or custom. These areas include Los Angeles County, some areas of Colorado, and the State of Wisconsin, in respect to certain produce items.

Support the Signalmen's Political League

CHEVY CHEYENNE

Where truck value is a matter of fact.



Fact: Over half of our 15-year-old trucks are still on the job.

Long, dependable service can tell you a lot about truck value and economy. So we checked the record books as far back as 1957. As the chart shows, 51.4% of our 15-year-old trucks were still in service on July 1, 1972.

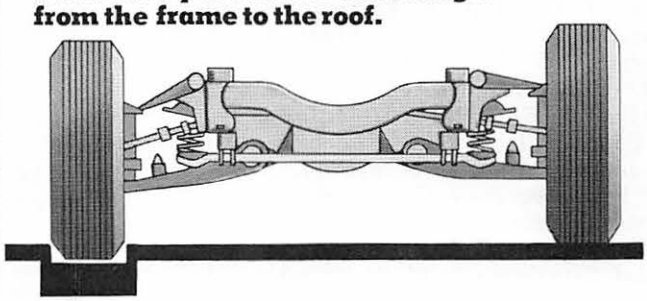
Fact: Year in and year out there are more Chevy trucks in use than any other make.

The actual number of trucks in use is another indication of truck value. And according to R. L. Polk and Co. official industry statistics, there are more Chevy trucks in use than any other make. Year in and year out.

Fact: Chevy light-duty trucks have traditionally high resale value.

Another way to measure truck value is by what they're worth when you're ready to make a trade. And according to Automotive Market Reports, an authoritative industry source, Chevy light-duty truck resale value is traditionally high when compared to other makes.

Fact: Chevy trucks are built tough from the frame to the roof.



Massive Girder Beam front suspension.

It's designed to withstand a life of hard knocks. Tough steel control arms with friction-free coil springs flex freely up and down, allowing front wheels to step independently over the rough spots. Multi-leaf rear springs are balanced to the front suspension.

Double-wall construction.

We build two walls of protection in pickup box, doors, hood, front fenders, even in the roof.

Computer-matched braking systems.

Complete brake systems are computer-matched to pickup size and capacity. Heavier duty trucks get heavier duty brakes.

Lasting Chevy Value

News from Canada

Burman lodge 165 met in Toronto

Regular meeting of Canadian National lodge 165 was held Mar. 3, 1974 in Toronto. Members present were: **A. J. Gavine, B. T. Holliday, J .D. Smith, R. E. Swan, J. Kutz, W. W. Shaefer, B. King, M. Meraw, G. F. Aitchison, S. Dembinski, B. B. Butler, M. Ferguson, D. Majury, F. E. Cable, W. D. Kibzey, J. Coughlin B. March, L. Leentjes, J. Johnson, L. W. McCutcheon, J. M. Riley, P. Fedorchak, G. Donovan, M. Clark.**

The meeting was opened by Chief Signalman J. D. Smith who welcomed BofRS Vice President **John Platt.** Smith gave the obligation to new members M. Clark, P. Fedorchak and G. Donovan.

As of Friday, March 1, 1974, Gang. No. 12 will be dispersed as the C.T.C. on the Weston line is completed. The foreman and the Leading Mechanic will go to positions bid by them. The unassigned helpers will be told where to report.

Local Chairman Gavine will photostat copies of the Government circular concerning away from home expenses and these will be sent to all ranks.

Regarding annual vacations as per our new contract, effective Jan. 1, 1974, the annual vacations are as such: 2 weeks after one year, 3 weeks after six years, 4 weeks after sixteen years, and 5 weeks after twenty-five years.

There was a discussion on the call in pay for 189-hour employees on a general holiday. The same rules apply as before except that you will now charge 4.5 hours per call against the guarantee.

The St. Lawrence Region and the Great Lakes Region are going to amalgamate. From Jan. 1, 1974 to Dec. 31, 1975, the St. Lawrence Region employees will have preference on jobs on their region. The job in Pembroke will go to the Montreal area upon the retirement of the present incumbent. Gangs presently working on the Kingston Subdivision etc will complete this project and then be located before Dec. 31, 1975. On Jan. 1, 1976, the employees on the St. Lawrence Region will be dove-tailed into the Great Lakes Region seniority.

The members present welcomed Brother Meraw who had been off work for some time with a lengthy illness.

J. Kutz
Secretary-Treasurer

Jacket Available

For Canadian National railroaders, Bernard Godbout, signalman at Pointe St. Charles Shops, Montreal, has a royal blue, 100% nylon jacket with snap fasteners. Red, white and blue stripes run from the right hand side pocket up to the shoulder. On the left side is a CN locomotive crest.

Jacket sizes available are small (34-36); medium (38-40); large (42); extra large (44). Please send certified cheque or money order payable to Bernard Godbout in the amount of $13.96 (tax and packing included). For 46, 48 or 50 sizes the price is $16.30 (tax and packing included).

Decals of the CN locomotive crest are available at 50¢ each.

Bernard Godbout, c/o CNR, P.O. Box 8100, Montreal, PQ H3C 2H8.

Obituaries

Fred J. Schultz, retired member of Local 96, Penn Central (former New York Central-Lines West), passed away recently. He was 83.

Brother Schultz had completed 44 years of service with the New York Central when he retired August 31, 1956. At the time of his retirement he was employed as a signal maintainer at Collinwood, OH.

He was an active member of the BRS and served his local as recording and financial secretary from 1926 to 1956.

The officers and members of Local 96 extend their deepest sympathy to the surviving members of his family.

George Franklin Harper, vice-president, Brotherhood of Railroad Signalmen, died March 30 following a long illness in Northwest Community Hospital in Arlington Heights, IL. He was 52 years old.

Funeral services were held on April 2 at the Notasulga, AL Methodist Church. Those in attendance at the services included C. J. Chamberlain, president, BofRS; T. J. Bates, secretary-treasurer; and the following vice-presidents: W. W. Altus, J. T. Bass, C. S. Chandler, M. B. Frye and J. W. Walsh, W. W. Lauer, chairman, BofRS board of trustees, and G. A. Harrington, secretary, board of trustees, also attended as well as W. D. Best, director of research, and W. B. Harwell, grand lodge representative. Over 100 other members of the BofRS also attended the funeral services.

Brother Harper was born on Feb. 26, 1922 in Palmetto, GA. A high school graduate, he also completed an electronics training course during his railway career. He joined the Atlanta & West Point-Western Railway of Alabama in 1941 as a track laborer and a year later transferred into the signal department as a signal helper. In 1943 he was promoted to signal maintainer at Notasulga, AL on the WRyAla. In 1958 Brother Harper was transferred in the same capacity to Montgomery, AL, and in 1966 he was promoted to signal inspector on the A&WP-WRyA-Georgia system.

Always active in BofRS affairs, Brother Harper was a charter member of the A&WP-WRyA local, joining in April 1946. From 1955 to 1966, he was chairman of Local 49 Miller-Griffith. During this time he was also able to serve for three years as Alabama State Legislative Representative (1958-1961) and an-

other three years as vice-general chairman, joint general committee for Locals 11, 49, 105, 110 (1963-1966). He was elected general chairman in 1967. Also, Brother Harper was a delegate to BofRS conventions for four consecutive meetings beginning in 1961. On September 1, 1970 he was appointed grand lodge representative, and in July 1973, Brother Harper was elected vice-president midwest at the annual convention.

He was a Methodist, a 32nd degree Mason and a Shriner.

Vice-President Harper is survived by his wife Sue, a daughter Susan and a son Michael.

The Grand Lodge Officers on behalf of all our members, express our sincere sympathy to the members of his family. His death is a great loss to our membership.

Joseph W. Walsh, Sr., 75, died April 4, in the Pleasant View Nursing Home in Warren, RI, following a 3-month illness. He was the husband of the late Alice M. (Dubuque) Walsh.

Mr. Walsh was a yardmaster for the New Haven Railroad until he retired 10 years ago. Also, he was secretary-treasurer of Local 66, Brotherhood of Railroad Trainmen.

A World War I army veteran, he was a member of the Yankee Division of the Last Man's Club and the East Greenwich Golden Agers. He was born in Providence, RI.

Mr. Walsh is survived by two sons, Joseph W. Walsh, Jr., of Elk Grove Village, IL, a vice-president, BofRS; Steven M. Walsh of New York; a daughter, Mrs. James R. Macnie of East Greenwich, RI, and six grandchildren .

A mass of Christian burial was held in St. Raymond's Church, Providence, RI, with burial in Gate of Heaven Cemetery, East Providence.

Willie Lee Harris, signal maintainer, Seaboard Coast Line, Palmetto, FL, died Dec. 5, 1973.

Emil F. Rushlow, retired member of Grand Lodge Local, Detroit & Toledo Shore Line, passed away. He was 65.

Brother Rushlow retired October 17, 1970 after completing 47 years of service with the Detroit & Toledo Shore Line. When he retired he was employed as an inspector at Toledo, OH.

The officers and members of Grand Lodge extend their deepest sympathy to his family.

GC and Local News

Erie Lackawanna news by Stephen J. Muzi

Fourth quarter 1973. Erie Lackawanna is involved in the bankrupt railroads in the Northeast. The rail lines that will be kept as a core system have not as yet been determined.

President **Charles J. Chamberlain** said in his letter to the Honorable **Claude S. Brinegar,** Secretary of Transportation, "During the coming months and years railroads will be called upon to handle increased traffic and there will be a considerable increase in traffic density on already heavily traveled main lines. Surely this is no time to reduce the effectiveness of Signal systems." This was very well put by President Chamberlain, who was on the committee working on this agreement for the Northeast Regional Rail Transportation Legislation.

August 19, 1968 Protective Agreement: I have not received any information as to the decision from the courts, but keep in mind that under the Bankruptcy which we are included, this agreement may be done away with, unless the Erie Lackawanna withdraws from bankruptcy.

On October 30 and 31, 1973 we had a Special Board of Adjustment (No. 805) meeting at Cleveland, Ohio to discuss claims under this agreement for interpretations, representing the Brotherhood was Vice President **M. B. Frye** of Grand Lodge and myself, for the Carrier were **W. E. Willey** and **R. White** of Labor Relations, **Francis A. O'Neill, Jr.** was the Neutral Member. To date we have not received any decision from Mr. O'Neill.

Camp Cars: Conference has been scheduled for January 23, 1974 on this agreement. Proposals were given to the Carrier by the organization June 7, 1973. The Carrier has counter proposals which they will present at this meeting.

Training Program: The training program was signed at Cleveland, OH November 14, 1973. When the agreement is printed it will be distributed to all Signal Supervisors, to be given to assistants and helpers and Signalmen if requested. This program will be for 4 periods instead of the 8 periods. It will be set up by the Carrier with practical training in all phases of Signaling. Management and the BofRS will agree upon a technical course. Management shall provide and make available to the employees, an approved course, booklets, pamphlets and other material to permit them through study to prepare for all examinations. Classes shall be conducted on company time and paid for as if working, up to regular quitting time.

This is only a small part of this agreement. I am sure this is a step in the right direction to educate our younger members.

Carrollton Local 20 met in Chillicothe

Meeting of Local 20 (Santa Fe Railway) was called to order by Chief Signalman **C. W. Hall,** January 26, 1974, at Chillicothe, IL. Chaplain **J. D. Brewer** asked the blessing of God on the deliberations. Members present were: **G. W. Franklin, III, D. M. Thornton, J. D. Brewer, Billy Harr, C. W. Blew, R. T. Manietta, V. R. Whittemore, J. R. Riggs, W. L. Gladbach** and **C. W. Hall.** Retired member **Paul R. McCullum** was present as well as General Chairman **R. R. Van Vacter.**

The following were accepted into the membership of the Brotherhood by Local 20: **David R. Darr, Mahlon D. Smith** and **James H. Gladbach.**

Among the many items discussed were the misuse of Signal Inspectors to perform Signal Maintainer's work, the set-offs on the Division and the Dues Check-Off Agreement. It was explained to the members that those using dues deduction would have dues deducted on a monthly basis and would not exceed the amount established as the monthly dues for a particular Local.

Local 20 moved to approve the By-Laws revisions of the General Committee. It was noted that if ratified, the By-Laws would go into effect April 1, 1974.

Richard R. Van Vacter
General Chairman

Signalman's Worksheet

DC Track Circuits (Cont'd)

One other natural phenomenon also works against the high release relay. At nominal low ballast conditions and when there have been no trains over the circuit for some time, the rails seem to settle themselves into the ballast—or something else happens, exactly what, we don't know—which also brings the ballast resistance to a sub-low and reduces the relay current below its pickup value. Under this condition, if we should momentarily shunt the relay, it would not pick up again. Fortunately, the favorable part of this phenomenon is that when a train does run over such a circuit it disturbs the rail and ballast contact and increases the ballast resistance so that the relay picks up readily when the train gets off the circuit. Here again, a high percent release relay would be of no benefit.

Track Batteries

There are four different types of cells ordinarily used for track batteries: copper-oxide zinc, carbon-zinc, lead-acid, and nickel-iron. Here are their average voltage ranges:

Type of Cell	Voltage Range
copper-oxide zinc	0.9 to 0.55
carbon-zinc	1.3 to 1
lead-acid	2.2 to 1.9
nickel-iron	1.5 to 1.1

As shown in Figure 105, obviously we must adjust our track circuit so that the relay will pick up at one quarter ohm ballast when our track cells are at their minimum voltage. When the cells are at their higher voltage, the circuit will operate at a lower ballast—and the shunt will have to be lower to cause the relay to drop away.

Relay Resistance

The resistance of the track relay will increase with the temperature. We must allow for plus or minus 20 percent in relay resistance as the temperature inside the relay housing varies from 150 degrees above to 30 degrees below zero. Thus when we adjusted our 4-ohm relay to operate at one quarter ohm minimum ballast resistance, we must bear in mind that it will become 4.8 ohms, with possible failure to pick up; or, in cold weather, it will become a 3.2-ohm relay, and the shunt resistance will have to be relatively lower.

Rail Resistance

On a hot day, the rails are expanded; their ends are forced together with great pressure. In zero weather, the rails contract; they pull hard against the splice-plate bolts. With either of these two conditions, rail resistance is nearly like that of solid rail, approximately 0.015 ohm per 1000 feet of track, depending, of course, on the size of the rail. In moderate temperature, the joints are not so tight. The bonds must carry the current. Even with relatively good bonding, rail resistance of 0.03 ohm per 1000 feet of track is not unusual. Here again we must make allowances, and shunting may vary substantially.

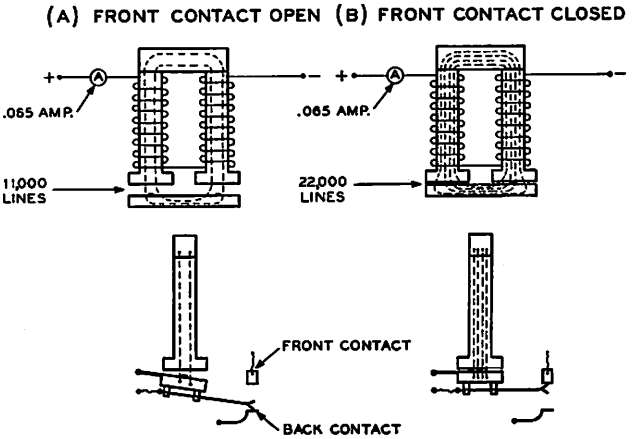


Fig. 106: Diagram of relay showing how flux is varied by armature position.

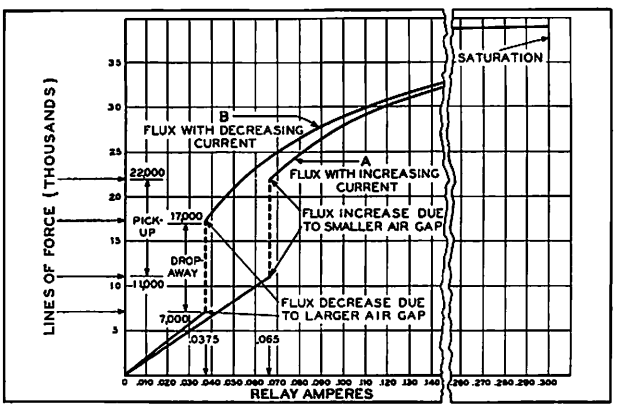


Fig. 107: Curves showing how flux varies with both current and armature position.

Relay Operation

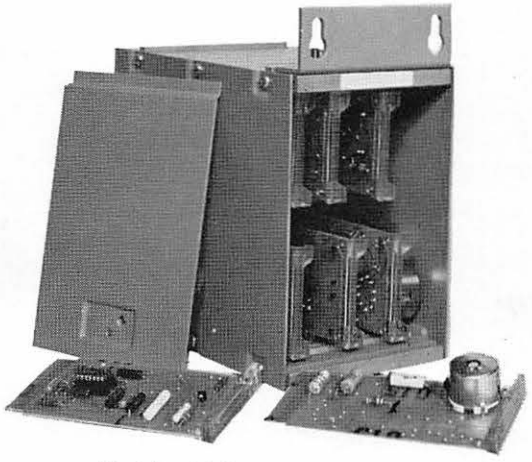
A relay, as outlined in Figure 106, is an electromagnet. Contacts attached to (and insulated from) the hinged armature make contact with the back contacts when the relay is deenergized and with the front contacts when energized.

Since the armature is hinged so that it may open or close the magnetic circuit, the flux within the magnetic structure of the relay will vary with the armature position as well as with the current through the coils. Figure 107 shows how the flux density is varied by these two factors, current and armature air gap. Figure 107 is not an exact representation of the values of any particular relay. It is simply offered as a general example of this phase of relay operation.

To Be Continued

NEW
SERIES FREQUENCY SHIFT OVERLAY TRACK CIRCUITS

Series FSO Module.



Module with frequency determining boards removed.

for Outlying Switch Lock Release

Precise tuning - narrow band widths and 330-Hz modulation provide precise tuning with minimum interference.

Choice of 3 frequencies - 13.8 KHz (channel 25), 17.0 KHz (channel 26), 20.9 KHz (channel 27) - mutually compatible, enabling transceivers to operate in close proximity without interference or the need of insulated joints.

Dependable and easy to maintain - solid state design provides dependable; long term service. All electronic components are mounted on plug-in circuit boards for ease of maintenance.

FSO compatible - all three channels are compatible with all GRS frequency shift overlay frequencies and most older type overlay track circuits.

Versatile - frequency determining elements are on two printed circuit boards. Simply replace these boards to change the operating channel frequency.

Compact - the transceiver occupies the space of a GRS Type B, Size 2 relay — 5 inches wide, 7 inches high, and 9 inches deep. It can be shelf, wall, or rack mounted in a wayside case or housing.

GENERAL RAILWAY SIGNAL COMPANY

A UNIT OF GENERAL SIGNAL

ROCHESTER NEW YORK 14602

3592

Get the time-saving advantages of

Complete Visual Battery Maintenance

in all your railway signaling and communications services

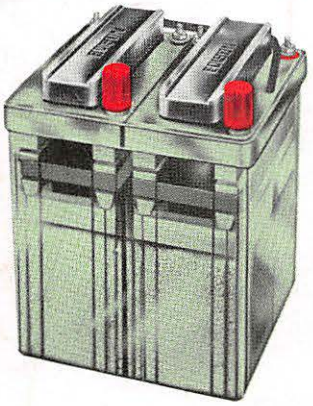
with

EDISON *Nickel-cadmium* STORAGE BATTERIES

■ Transparent acrylic cases for visual indication of solution height at all times. ■ Capacities from 80 to 400 ampere-hours, which cover a wide range of signaling and communications applications. ■ Designed specifically for moderate rate trickle or float-charged services.

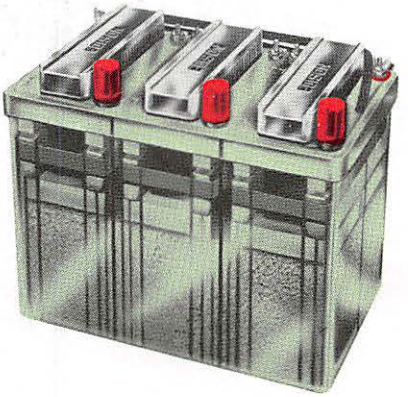
and

EDISON *Carbonaire®* BATTERIES—TYPE ST



■ Transparent acrylic cases for visual activation procedure **and** visual indication of exhaustion.

■ Available in 2-cell and 3-cell types with **external** inter-cell connections to make either series or parallel-connected batteries as required.



■ Depending on the type of battery and the connections made (series or parallel), the normal voltages are 1.25, 2.5 or 3.75 volts; and capacities are 1,100, 2,200 or 3,300 ampere-hours.

■ Maximum recommended continuous currents range from .500 amp. to 3.75 amps. depending on the type of battery, battery connections and operating temperature.

For complete details, just write us at any of the addresses below.

McGRAW-EDISON COMPANY
Edison Battery Division · Bloomfield, N.J. 07003

DISTRICT OFFICES: 122 South Michigan Ave., Chicago, Ill. 60603 (312) 427-4986 ● 8050 Watson Rd., St. Louis, Mo. 63119 (314) 849-2100 ● 755 East Airline Hgw., Kenner, La. 70062 (504) 722-1324 ● 2976 Atterberry Ct., Decatur, Ga. 30033 634-8004 ● 127 Martin Rd., Pittsburgh, Pa. 15237 (412) 366-2043 ● 133 Madora Pl., San Ramon, Cal. 94583 (415) 828-2800